

ALPHA DELTA

THIS PACKAGE CONTAINS:

**DX-DD 80-40
METERS**

82 Ft. Long

**“Delta Dipole”
SHORTENED DIPOLE**

- | | |
|-------------------------------|-----------------------------------|
| * Stainless Steel Hardware | * No Traps - No Power Limitations |
| * Special Nylon Rope Provided | * Automatic Band Switching |
| * Direct Coax Connection | * Compact Size |
| * Pre-Assembled Connections | |

CAUTION! CAUTION! CAUTION!
Installation of this product near
powerlines is **DANGEROUS**. USE
EXTREME CAUTION. Think Safety!

Made in U.S.A.

Alpha Delta COMMUNICATIONS, INC.

P.O. Box 620, Manchester, Kentucky 40962 - (606) 598-2029 FAX: (606) 598-4413

FIGURE 1

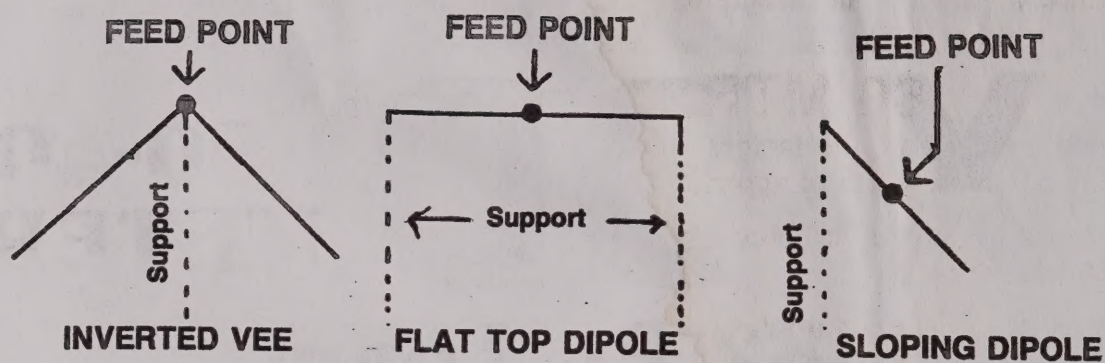
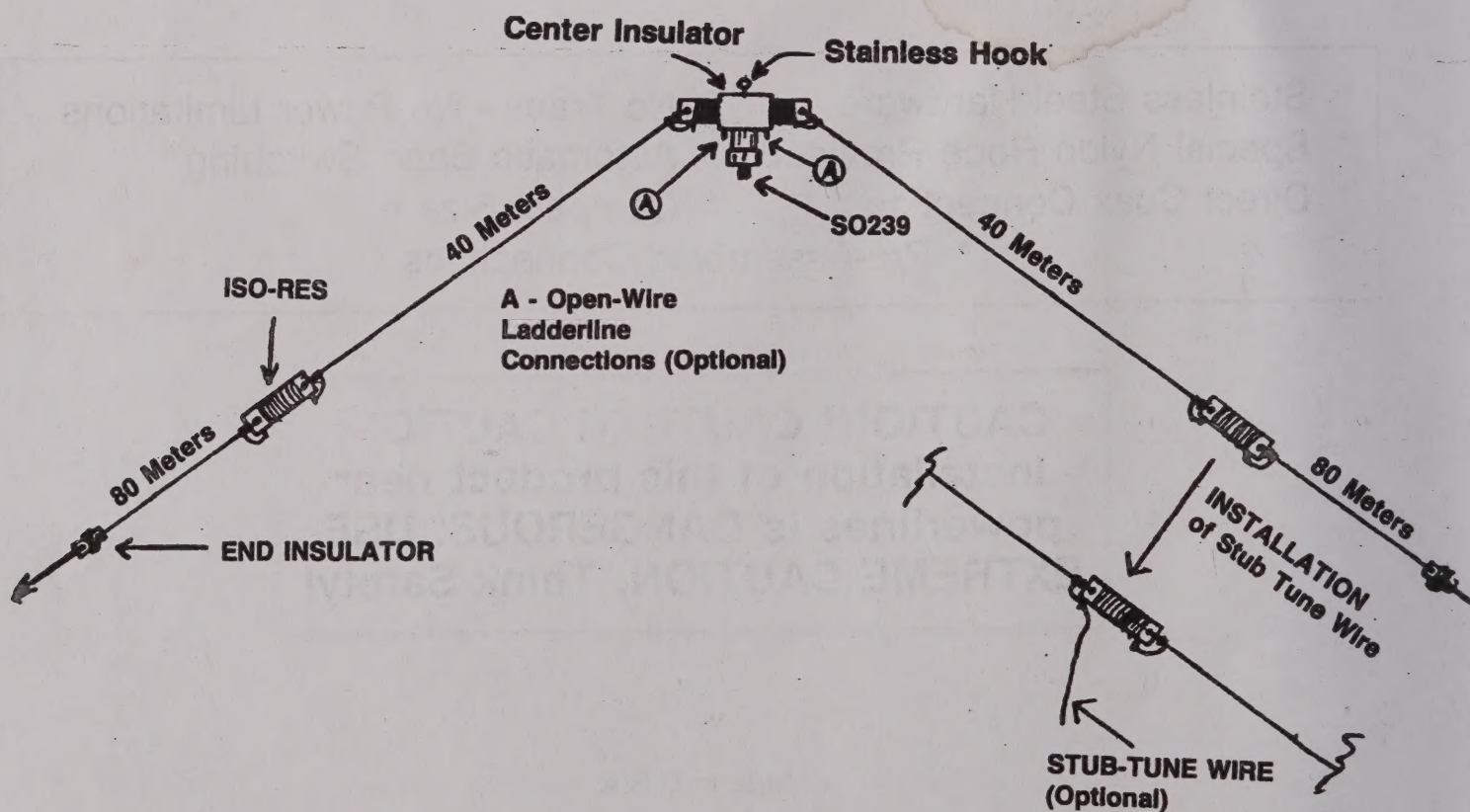


FIGURE 2



THANK YOU for your purchase of this Alpha Delta Model DX-DD 80-40 MTR "Delta Dipole" antenna. We know that you are going to be well pleased with the antenna and its performance. Only the best in materials and hand craftsmanship have gone into its design and construction.

The Alpha Delta DX-DD will deliver performance far beyond that of similar antennas of equal size. Like every antenna, the DX-DD must be installed correctly to achieve its inherent peak performance. To help insure that you do obtain good performance, we suggest that you read through this manual entirely and study the figures and diagrams associated with the installation.

80 MTR. RESONANCE

As the antenna comes from the factory, you will find 80 mtr. resonance at approx. 3600 KHz, with an S.W.R. 2:1 band width of approx. 60 to 70 KHz.

To raise the resonance to 75 mtr. phone (approx. 3850 KHz) remove approx. 8 inches from each side of the 80 mtr. wires.

It may be necessary to remove a total of 12 inches from each side of the 80 mtr. wires to raise the resonance to near 4000 KHz.

INSTALLATION NOTES

*Due to the fact that the Alpha Delta DX-DD antenna approximates a half wave dipole (although greatly reduced in length), the method of mounting or installing it does not present some of the problems associated with other types of antennas. Towers, trees, wooden utility masts, etc. may all be employed as the support structure for the Alpha Delta DX-DD!

*Refer to Figure No. 1: The DX-DD may be installed as an inverted vee, flat top dipole, sloping dipole, etc. The inverted vee configuration seems to be the easiest for most amateurs to utilize. It has several benefits, such as requiring but a single central support structure for the DX-DD center insulator. Remember, though, the Alpha Delta DX-DD was designed for compromise installations where there are space limitations. A little thought will allow the DX-DD to be installed in spaces normally thought to be too small for an antenna for these frequency bands!

*Tower mounting of the DX-DD will require some form of "standoff" for support of the DX-DD center insulator. A spacing of 18" or more away from the tower will prove adequate.

*Mounting height for the DX-DD is not overly critical. However, as with most half-wave antennas, the higher and in the clear, the better. Let the space you have available dictate the mounting height and scheme of installation.

*The introduction of your DX-DD into a tower system employing multiple guy wires or other wire antennas may cause detuning of the DX-DD antenna. This may be evidenced by a shift in the resonant frequency or increase in the minimum VSWR of the antenna. Try to keep the DX-DD as "in the clear" as possible. Installing the DX-DD so that it is in a different plane than guy wires will help, as will "breaking" the guy wires with strain insulators. For some installations, it may be necessary to employ the use of an antenna tuner to overcome this detuning situation.

* The DX-DD utilizes the exclusive Alpha Delta ISO-RES coil principle for shortening and multi-banding an antenna. The ISO-RES is not a trap, due to the fact that there isn't a trap capacitor being used. Thus, the DX-DD is a much lower "Q" antenna than one that would be constructed using true traps! This allows the DX-DD to be broader in bandwidth than is possible with a trap-type antenna of equal size. The lower "Q" also allows the user to employ a moderate range antenna tuner (match box) for achieving resonance and min. SWR anywhere within the covered frequency bands.

NOTE: Some automatic antenna tuners in transceivers do not have the impedance range to tune the Model DX-DD on bands other than the covered ranges. An external wide range tuner may be required.

INSTALLATION INSTRUCTIONS

1. Unroll the DX-DD wire elements, removing any kinks that may have been induced during the packing operation.
2. Choose the arrangement for mounting your new DX-DD, (inverted vee, flat top dipole, etc.). If the inverted vee form is chosen, cut a short length of the supplied rope to use as tie support for the DX-DD center insulator.
3. Tie the remaining two pieces of rope to each end insulator of the DX-DD.
4. Any 50 ohm coaxial cable may be employed for use with the DX-DD. We suggest the use of RG-213 as it is generally a good "buy" and will last many years. Installations where only low power operation is to be used can get by with RG-58A/U or RG-8X mini 8 type coax. Flat top DX-DD installations can also use a 75 ohm cable such as RG-59A/U or RG-11.
5. If the inverted vee configuration is to be used, try to arrange the ends of your DX-DD so that when viewed from the side the angle at the apex of the antenna is 90 degrees between the two element wires - See Figure No. 1.
6. The two ISO-RES coils have been coated with a very special polyurethane with UV light block polymer, and require no further coating or protection. A small amount of coax seal placed around the bare copper ends of the element wires (at the screws) on the coils would be helpful.
7. When placing any coaxial sealant over the SO-239 coax connector on the bottom of the DX-DD center insulator, be certain not to cover the four drain holes provided to allow moisture release!
8. When tying off the two ends of your DX-DD, allow a small amount of slack (or sag) in the system. Don't cinch the elements down snug!

INSTALLATION INSTRUCTIONS

for

PRO-BALUN MODEL PB-1

The "Pro-Balun" Model PB-1 is a 1:1 impedance ratio balun that matches 50-75 Ω coax to 50-75 Ω balanced load.

By converting the unbalanced feedline, into a balanced feed, power is radiated by the antenna not the feedline.

The PB-1 balun will handle full legal power (2000W PEP) with a low SWR.

Do not use the PB-1 with a matchbox unless the SWR is low where the balun is installed.

After the balun is installed, the transmitter must be tuned to the correct antenna frequency before applying power. Failure to do so may damage the balun.

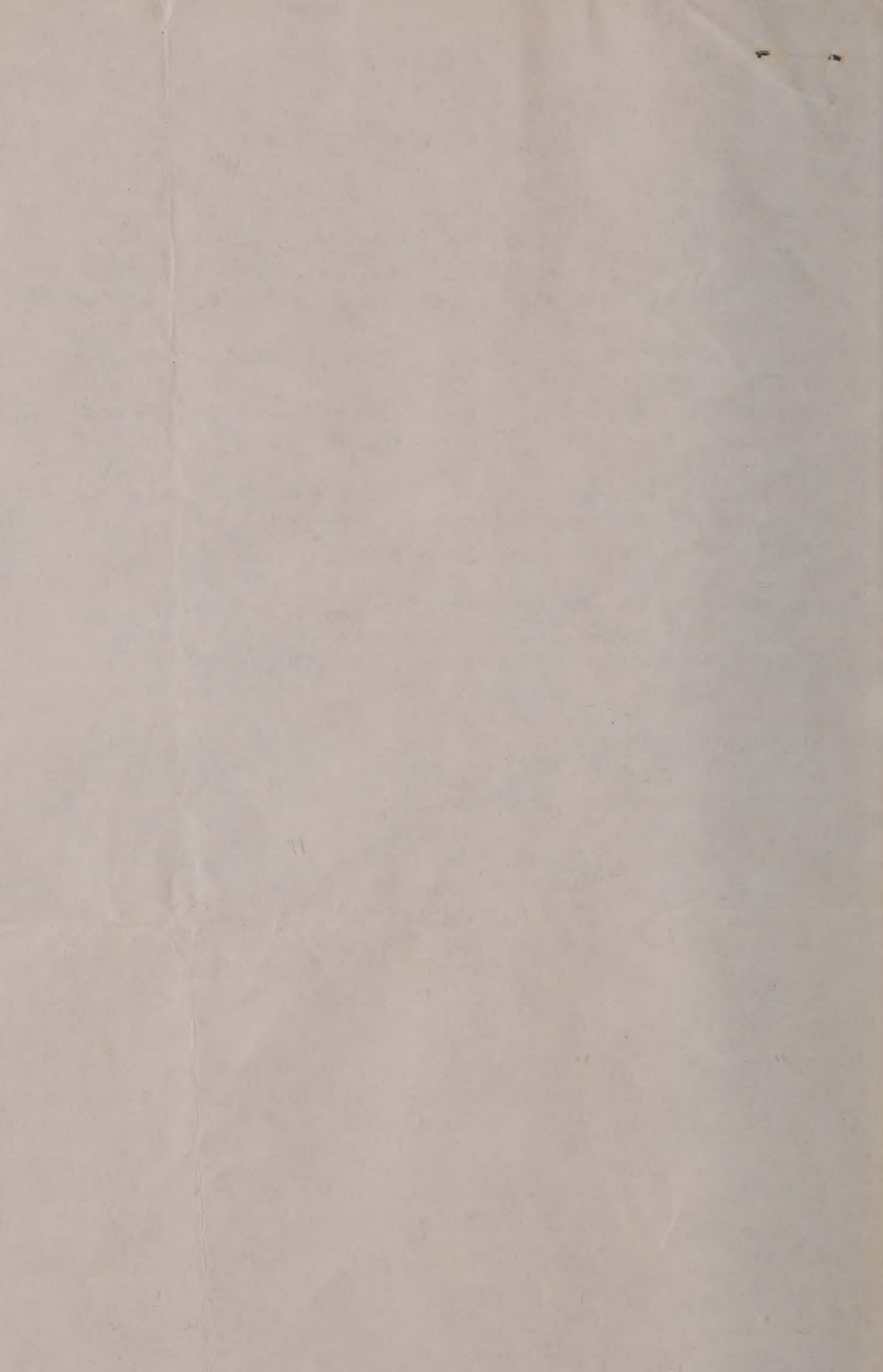
Use the PB-1 Pro-Balun with dipoles, inverted "V's", yagis, flat-tops, slopers, & beams. Simply connect the balun's solid brass terminals to the driven element, or in place of the center/feed connector.

The PB-1 is equipped with the standard UHF (SO-239) receptacle that accepts PL-259 connectors. Always mount the connectors facing downward.

Specifications: Broadband 3-35 Mhz.
Handles 2000 Watts, PEP
1:1 Impedance Ratio
DC grounded for lightning protection
Weatherproof, sealed construction
SO-239 receptacle

For best results, the antenna should be mounted away from all interfering objects such as guy wires, metal buildings, power lines, trees, etc.

WARNING: Do not turn eye-bolts, or brass side terminals, this can cause internal damage to the balun.



INSTALLATION INSTRUCTIONS

for

TRAP DIPOLE ANTENNAS

Find a suitable location for your antenna, keeping it away from metal buildings and objects that may interfere with the performance.

ALWAYS make sure there are no power lines nearby. Keep away from all overhead lines.

The center connector/insulator is equipped with a SO-239 receptacle, that accepts the standard PL-259 connector.

When installing the trap dipole antenna, mount the center connector/insulator as high as possible. At least 20 feet, preferably 30-40 feet. The ends of the antenna can be mounted lower, in such a manner as an inverted "V". However, the ends should be a minimum of 15 feet (or higher) for best results.

***** WARNING *****

ANY ANTENNA ELEMENTS, WIRES, LEAD-INS OR FEEDLINES SHOULD NEVER COME CLOSE TO, OR CROSS ANY ELECTRICAL LINES. TO AVOID ELECTRICAL SHOCK, STAY AWAY FROM ALL OVERHEAD LINES. NEVER USE ALUMINUM LADDERS, USE WOODEN LADDERS OR SUPPORTS, IT'S ALWAYS GOOD PRACTICE TO HAVE AN EXTRA PERSON ON THE JOB TO HELP LOOK OUT FOR HAZARDOUS CONDITIONS, AND PROVIDE AN EXTRA MARGIN OF SAFETY.

The antennas that are shipped factory assembled are pre-adjusted and in most cases need no further adjustments. However, because of various surroundings such as trees, buildings, etc. it may be necessary to make slight adjustments to achieve a low SWR. To lower the resonant frequency of the antenna, the elements should be lengthened. To raise the resonant frequency, the elements should be shortened. Make adjustments a little at a time.

- Model D-32 If the 15 meter band needs adjusting, adjust the elements closest to the center connector/insulator.
 If the 20 meter band needs adjusting, adjust the elements next to the end insulators.
 If both 15 & 20 meter bands need adjustment, adjust the 15 meter band first.
- Model D-42 If the 20 meter band needs adjusting, adjust the elements closest to the center connector/insulator.
 If the 40 meter band needs adjusting, adjust the elements next to the end insulators.
 If both 20 & 40 meter bands need adjustment, adjust the 20 meter band first.
- Model D-52 If the 40 meter band needs adjusting, adjust the elements closest to the center connector/insulator.
 If the 80 meter band needs adjusting, adjust the elements next to the end insulators.
 If both 40 & 80 meter bands need adjustment, adjust the 40 meter band first.

NOTE: Do not turn or apply heat to the side terminals or eyebolts. This can cause internal damage.

Instruction Bulletin

PROTAXTM R.F. COAXIAL ANTENNA SELECTOR SWITCHES

MODELS 375 and 376

Barker & Williamson PROTAX R. F. Coaxial Antenna Selector Switches are designed to provide a convenient method for selecting appropriate antennas in receiving and transmitting service at frequencies up to 150 megacycles. The new PROTAX design incorporated in these switches permits automatic grounding of unused antennas, thus offering a degree of protection to receivers, transmitters, etc., from transients on the antenna or transmission line.

All models of PROTAX Antenna Selector Switches are built in sealed metal cases. The Models 375 and 376 are intended for mounting behind panels up to 1/4" thickness. The Model 376, with its radial connectors, may also be mounted by means of the furnished bracket to a wall. All switches are furnished with appropriate self-marking escutcheon plates, molded plastic knob, and necessary mounting hardware. The connectors on Barker & Williamson PROTAX Antenna Selector Switches are type SO-239, commonly known as U.H.F. type, and made with the male cable connector, type PL-259. All switches are marked with either a schematic diagram of the switch or with terminal numbers corresponding to positions on the escutcheon plates. Since all switches are mounted in sealed cases, they are not expected to be serviced in the field. All internal conductors and current carrying metal switch parts are silver plated and ceramic insulated.

A heavy solder lug is furnished with each PROTAX switch to which the user should attach a length of heavy copper braid, the other end of which should be connected to the system ground in the station.

SPECIFICATIONS

Mechanical	Model 375	Model 376
Terminals:	Axial	Radial
Diameter:	4 1/8" max.	4" over connectors
Length:	2 3/8" behind panel	2" behind panel
Shaft Length:	7/16"	7/16"
Function:	*Double Pole - 6 position	*Double Pole - 5 position
Finish:All Models: Electro-tin plated steel.....	
Weight:	13 oz.	13 1/8 oz.

*Note: The second pole of each of these switches is used to accomplish the grounding function.

Electrical (All Models)

Power Rating (max.)	**1,000 watts
Current Rating (max.)	**5 amperes
Voltage Rating (max.)	500 volts R.M.S.
VSWR at 50 ohms	Less than 1.3 to 150 Mc.
Insertion Loss	Negligible
Cross Talk	Negligible

**The current and power ratings are steady-state maximum values. In transmitting application, it is not intended to operate the switches while transmitter is in operation.

INSTALLATION


Select location on panels for the switch using the escutcheon plate as a template. If you are mounting more than one switch on the panel, keep in mind that while the escutcheon plates for all switches are the same size, the diameter of the switches differ; e.g., the Model 375 is 4 1/8" maximum and the Model 376 is 4" in diameter over connectors, but additional clearance should be allowed for cables and connectors. From the escutcheon plate, mark and drill four holes in the panel; three 7/32" or #8 drill holes for the mounting screws, and one center hole, 13/32". Remove center nut and lockwasher (3/8"). Insert switch in panel from behind. Place the escutcheon plate over shaft and bushing and install 3/8" nut and lockwasher finger tight. Rotate switch body and escutcheon for correct orientation (label stamp on top side of case), and insert three #10 Phillips screws and lockwashers through panel and escutcheon. Tighten all screws and install knob. The white pads on the plate may be used to mark your own functions using pencil, India Ink, or typewritten labels. Markings can be protected by applying new type "Magic" Scotch Brand tape over each pad.

OPERATION AND APPLICATION NOTES

The PROTAX grounding feature of these switches is intended to offer a degree of protection to your receiver or transmitter from transient voltages that may be picked up on the antenna. A prerequisite for satisfactory operation and protection is a good ground connection from the body of the switch to the system ground in the station. It is not recommended that you depend upon the shielding of the coaxial cables for this ground. We recommend the use of a tinned copper braided lead, such as Belden 8661.

While the PROTAX grounding feature is of value in protecting your equipment, no guarantee can be made that, in the event of a direct lightning strike on your antenna system, the equipment will be completely safe from damage. In the case of a direct lightning strike, it is expected that the switch will be destroyed beyond repair.

In the Model 375 Axial Terminal Switch, all terminals, **except** the one in use, are grounded **and** shorted together.

In the Model 376 Radial Terminal 5-position switch, there are six mechanical switch positions. When equipment is not in use, turn knob to the 6th position (marked ) , and all antennas are grounded and shorted together.

For applications of antenna selection where grounding of unused antennas is not desired, standard Barker & Williamson selector switches are available.

BARKER & WILLIAMSON, INC.
BRISTOL, PENNSYLVANIA 19007

GARANT GD-7

25.88m

BALUN

51.77m

77.65m

255 ft

CONGRATULATIONS !

Here is your high quality GARANT GD-7 ANTENNA. It takes only a few moments to cut the wire to size and to assemble the antenna as depicted above. Most effective operation is achieved when the antenna is in the clear - away from guy wires, power and telephone lines, trees, buildings, etc. The higher the GARANT GD-7 is installed the better will be the results. The SWR-curves shown here were accomplished with the antenna 8m (25 ft.) above ground and a water level of about 2m (6 ft) below surface.

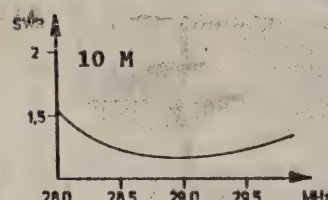
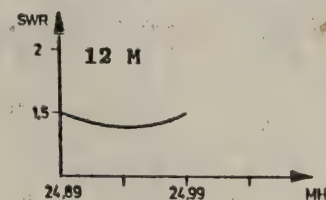
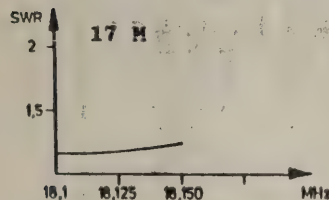
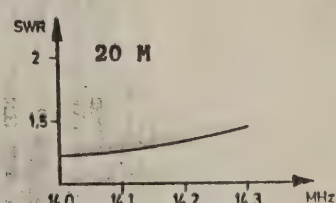
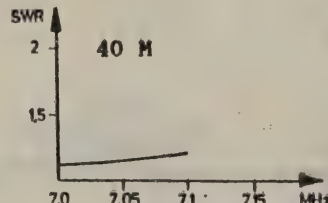
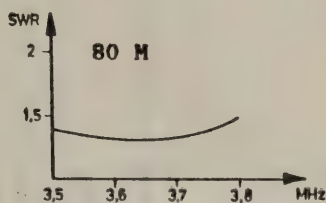
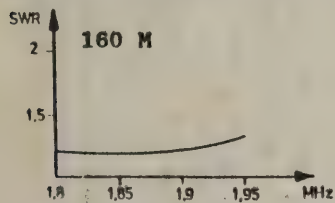
When operating and using the GARANT GD-7, be sure the transmitter is tuned to the correct frequency before power is applied. Operating a transmitter not tuned to the correct antenna frequency may damage the balun. This will also be the case if you apply more than 500 Watt PEP to the antenna. This is misuse and is not covered under warranty. Any breakage of antenna wire will be considered an accident, but there is sufficient wire supplied to patch any broken wire.

There is enough wire enclosed to assemble the antenna correctly. Always cut the wire so that you'll have at least 20 cm more on each side than is shown above.

The correct length for the wire that runs from endinsulator "A" to the "BALUN" is 25.88 m. The length for the wire that runs from the "BALUN" to the endinsulator "B" is 51.77 m. If you use these measurements and put the antenna up high enough and horizontally there will be no need for any further adjustment of the wire.

The GARANT GD-7 ANTENNA can be used as an inverted-V antenna or horizontally with a 90° angle at the balun, but the SWR might be different than shown here.

TYPICAL SWR -- GARANT GD-7



CONVERSION TABLE

77.65m	=	254' 9 1/8"
51.77m	=	169' 10 1/4"
25.88m	=	84' 10 7/8"
3058m	=	1'

The GARANT GD-7 is designed for operation on 160-80-40-20-17-12-10m band. If you want also to work on 15m or 30m you must add the GD+2 conversion kit that turns your GD-7 into a GD-9. If you ever find (after moving) that you don't have sufficient space for the GD-7/GD-9, please write to GARANT ENTERPRISES and we'll mail you the instruction sheet for the GD-6/GD-8. Please enclose proof of purchase and \$ 1 for postage and handling.

GARANT ENTERPRISES warrants for a period of 3 years from the date of purchase by the original consumer this antenna to be free, under normal use and service, from defects in materials and workmanship and to promptly repair or replace the product at our option when it is returned with proof of purchase to our GARANT WARRANTY SERVICE CENTRE, postage prepaid and return postage enclosed, during the 3-year period and our examination of the product discloses the defect to be our fault.

All claims of defect or shortage must be sent postage prepaid and return postage enclosed to: GARANT WARRANTY SERVICE CENTRE, Dept. GD, GARANT ENTERPRISES, 227 County Blvd., Thunder Bay, Ontario, Canada, P7A 7M8.

The warranty shall not apply to any product which has been repaired or altered in any manner by anyone other than our GARANT WARRANTY SERVICE CENTRE or products which have been subject to misuse, negligence, accident, or which have been connected, installed, used or otherwise adjusted other than in accordance with written instructions furnished by GARANT ENTERPRISES.

GARANT ENTERPRISES does not assume any liability for incidental, special and/or consequential damages of any kind whatsoever and in any event our liability shall in no case exceed the original purchase price of the product. Implied warranties, including without limitation, warranties of merchantability or fitness are expressly limited in duration to the 3-year warranty specified above.



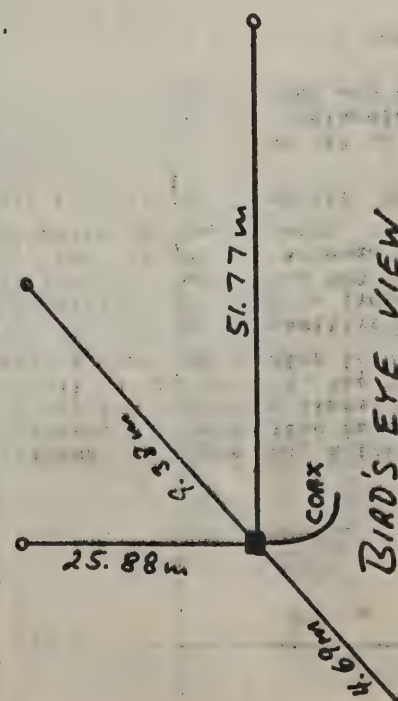
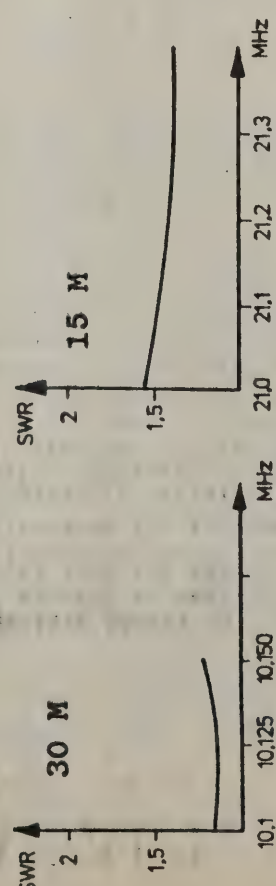
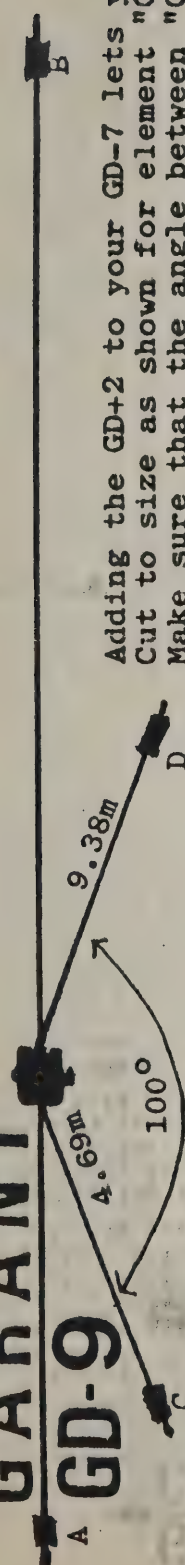
Connect antenna wire to balun as shown here. Twist wire 3 to 5 times and solder together where shown in picture. Use 50 to 60 Ohm coax cable to feed your new GARANT GD-7. Good luck and be careful. DO NOT TOUCH POWERLINES WITH YOUR ANTENNA. THIS COULD BE DEADLY!

GARANT ENTERPRISES

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(807) 767-3888

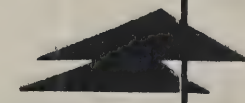
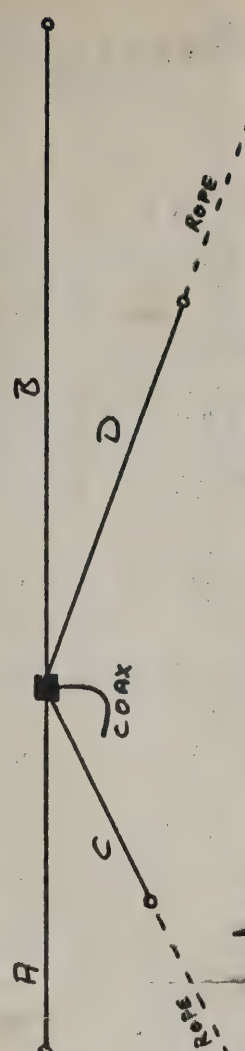
GARANT

GD-9



Adding the GD+2 to your GD-7 lets you work 15m and 30m. Cut to size as shown for element "C" and "D" and install. Make sure that the angle between "C" and "D" is about 100°. Now you got the GARANT GD-9 which lets you work 160-80-40-30-20-17-15-12-10m. Typical SWR curves are shown on the left.

As the GD-9 is such a long antenna you may want to try one of the two suggested ways to hang it up. The SWR might change a little, but not much.



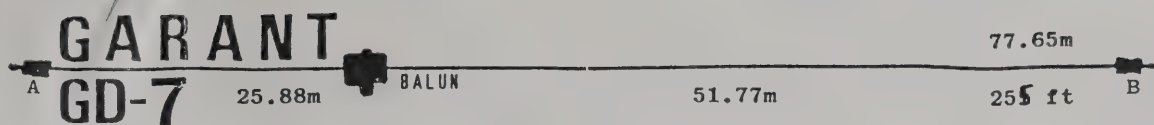
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NOTE: The SWR at your own location may differ from the values reprinted here for the GD-7 or GD-9. Due to the length of the antenna and the surroundings these values may be better or worse. The windom is sensitive at the ends and at the feedpoint (balun area). Your groundwater level does also influence the performance of any windom antenna. The SWR values shown in this instruction sheet for the GD-7/GD-9 are similar to the ones published in an article on the GD-7/GD-9 antenna in a large amateur radio magazine.

CONVERSION TABLE

9.38m	=	30' 9 1/2"
4.69m	=	15' 4 5/8"
.3048m	=	1.0'



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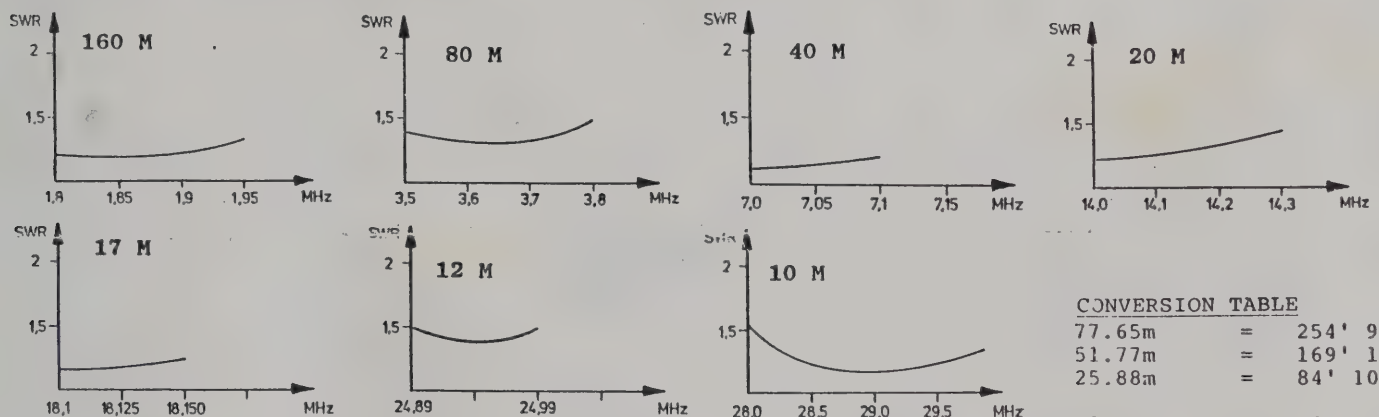
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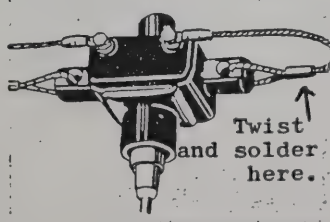
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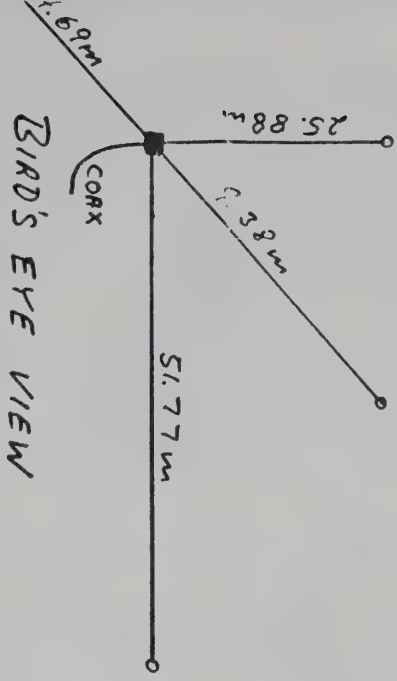
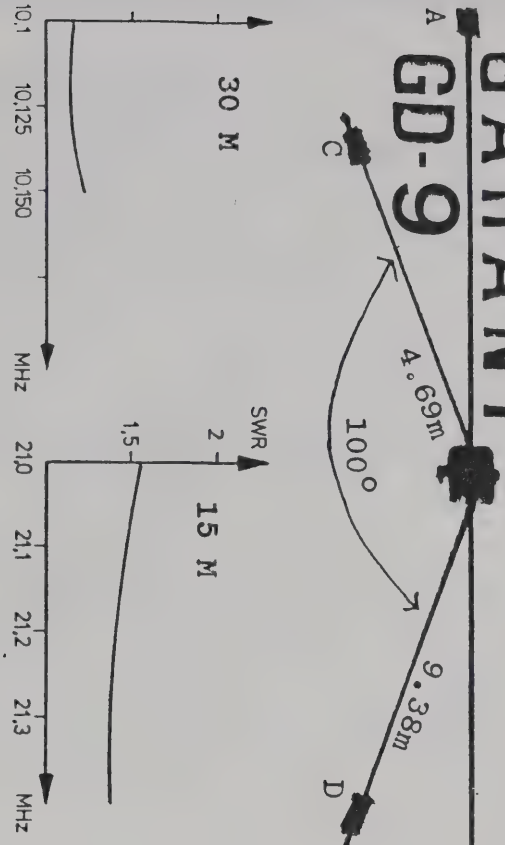
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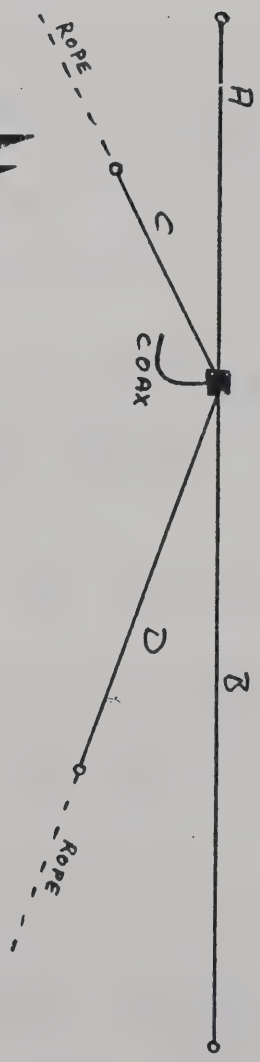
GARANT

GD-9



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NOTE: The SWR at your own location may differ from the values reprinted here for the GD-7 or GD-9.

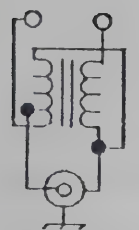
Due to the length of the antenna and the surroundings these values may be better or worse. The windom is sensitive at the ends and at the feedpoint (balun area). Your groundwater level does also influence the performance of any windom antenna. The SWR values shown in this instruction sheet for the GD-7/GD-9 are similar to the ones published in an article on the GD-7/GD-9 antenna in a large amateur radio magazine.

CONVERSION TABLE

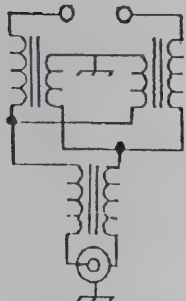
9.38m	=	30' 9 1/4"
4.69m	=	15' 4 5/8"
.3048m	=	1.0'

THE SECRET OF THE GARANT SPECIAL WINDOM BALUNS

In 1928, Loren Windom, W8GZ developed a dipole design that bears his name. If you took the proper feeding point which was off-center in an approximate 1/3:2/3 configuration his dipole design would be able to work several HF bands with one antenna. At that time he used an open feedline. You can't use those open feedlines any longer, because of TVI and the danger of electric shocks, which could mean law suits later on.



500W PEP



2KW PEP

The GARANT WINDOM ANTENNAS with 500W PEP power handling capability use a one-step balun as shown in the schematic to your left. A toroid with the proper winding ratio will do the trick that you can use our windom with regular coax cable, i.e. RG8U, RG213U. The balun will transform the low impedance of the feedline into the correct high impedance at the antenna feedpoint.

Our GARANT SPECIAL BALUN with 2KW power handling capability uses a two-step approach. That's why we call it a duplex balun. The upper part of the balun acts like a choke or current balun to reduce the amount of unnecessary radiation of the feedline. This design has proven to be very effective for the last five years. It definitely cuts down on TVI and in certain cases it will help to flatten the SWR curves, i.e. on the GD-3 and GD-5 on the 10m band. In either case, 500W PEP or 2KW PEP, you'll get a GARANT WINDOM ANTENNA that performs really well, as the letters of our customers prove.

* * * * *

EXPLANATION TO THE SWR CURVES shown on page 2 of this data report. You'll have noticed that the data for the 75/80m band end at 3.8MHz and at 7.1MHz for the 40m band. The reason is simple. Those SWR curves are part of an article on the GD-9 type windom antenna in a European amateur radio magazine. **In Europe the 75/80m band ends at 3.8MHz and the 40m band ends at 7.1MHz.** It would be illegal to work above those frequencies in Europe.

We figured, we rather show you actual SWR curves, developed by an independent body, than those we found ourselves. If we had shown our own SWR values, you might think they were fabricated.

Nevertheless, read what the users of our GARANT WINDOM ANTENNAS write. Many use them as their sole antenna for all bands - including 75/80m or 40m. In June 1985, Frank Hughes, VE3DQB, at that time editor of the magazine, THE CANADIAN AMATEUR (TCA) published his test of a GARANT WINDOM ANTENNA. Here are Frank's findings for the 75/80m and 40m bands.

On the low end of the 80m band Frank found a SWR of 1:1.25. On the high end of the 80m band Frank found a SWR of 1:1.4. For the 40m band Frank published an SWR value of 1:1.1 on the low and high end of the 40m band.

I guess, those figures found by an independent tester, proof more than anything else, that the GARANT WINDOM ANTENNAS do really work as advertised. If in doubt, read the letters of our many antenna users. They are all genuine. We have them on file in our offices in Thunder Bay. If you don't trust us, drop in during regular business hours whenever you are in Thunder Bay and we'll show them to you.

Our area is great for fishing and hunting. Lake Superior is ideal for sailing. Perhaps, you'll work VE3LML/MM on Lake Superior. He uses a GARANT WINDOM ANTENNA model GD3-500W on his sail boat. Watch out for his call on the air.

Also keep in mind, all our GARANT WINDOM ANTENNAS are sold with a 10-DAY NO-RISK MONEY-BACK GUARANTEE. They also have a 3-YEAR LIMITED WARRANTY. Who else has this much confidence in his merchandise?



GARANT ENTERPRISES
227 COUNTY BLVD., THUNDER BAY, ONT. P7A 7M8
(807) 767-3888

FAX 1-807-767-0888

Dear Friend:

Thank you very much for your interest in our GARANT WINDOM ANTENNAS and requesting this data report. On the following pages you'll get acquainted with the GARANT GD-6, GD-7, GD-8 and GD-9 ANTENNAS. They are all modified windom-type dipoles. Rather than using an open high-impedance feedline, our antenna needs only the regular 52Ω coax feedline (i.e. RG8U, RG58U, RG213U, etc.).

The magic of our windom design is accomplished by our special balun. It matches the low-impedance feedline to the high-impedance antenna. There are no traps needed, and, best of all, **THIS ANTENNA WORKS WITHOUT A MATCHBOX, TUNER OR TRANSMATCH.** The CNIB, Canadian National Institute for the Blind and TCA, The Canadian Amateur, which is similar to QST have tested our windom antennas and stated in their test articles this fact. Again, **YOU'LL NOT NEED A TUNER!**

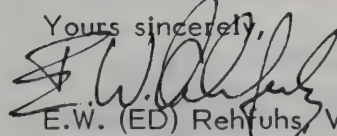
We have developed four different designs to enable you to work up to 9 HF bands with just one antenna. Our windoms are tested and used worldwide for a long, long time. Take the GD-6 design, it's a hit for more than 17 years. So, please, don't be fooled by cheap imitations calling themselves also windom antennas. There is only one proven windom antenna in North America -- that's our GARANT WINDOM ANTENNA. We are so confident about the quality of our antenna, that we sell it with a 10-DAY MONEY-BACK GUARANTEE and in addition back it with a limited 3-YEAR WARRANTY. Who else has that much confidence in their products?

I could tell you how well this antenna performs, but who wants to hear (or read) that. Perhaps, you wouldn't believe me anyway. So, to make it easy for both of us, on pages 3 and 4 of this report I have reprinted a few of the countless letters we have received from our many customers just here in Canada. YES! Those letters are genuine. The originals are on file for your inspection if you ever come to Thunder Bay. Drop in and say HELLO to the friendly crew at Garant and inspect the letters and all antenna designs. We have nothing to hide.

Not all hams have the full length available that is necessary to employ our GARANT WINDOMS as straight dipoles. You'll need 137' or 255' depending on the model. But, you can install all our antennas as an INVERTED-V or as a horizontal dipole and bend the antenna by 90° at the balun. To help you measure, here are more facts. If the total length is 137', the two legs of wire coming from the balun will have a max. length of approx. 46' and 92'. If you select a GARANT WINDOM with a total length of approx. 255', your two wires coming from the balun will have a max. length of approx. 85' and 170'. Although, we recommend to install an inverted-V with the balun at the highest point, because of the stability, you may also fold the antenna in half and get an inverted-V with the two wires being only half the total length. Got it? If not, read again!

If you still have questions, feel free, and call me during our regular business hours (MO to FR, 9.00AM to 5.00PM). We are equal with the New York time. In case, this data report answered all your questions, please, use the enclosed order form or order by phone. All orders received before 11.30AM will be shipped the same day. That's not only a promise, that's a fact.

Yours sincerely,


E.W. (ED) Rehfuhs, VE3LML
General Manager

PS. You may also FAX in your order, using our FAX-LINE 1-807-767-0888.

USA DR-HM-1
EWR/as

TESTED! PROVEN! IT WORKS!

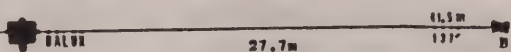
TCA, the magazine of the Canadian Amateur Radio Federation (CARF) has tested and recommended the GARANT GD-6. The Canadian National Institute for the Blind (CNIB) has tested and recommended the GD-6 and GD-8. The ARRL (QST) has tested and approved all GD-antennas.

WORK ALL 9 HF BANDS WITH JUST ONE GARANT DIPOLE "GD"

ALL BAND NO TRAP ANTENNA!

NEW! NOW ALSO 160M-BAND WITH CONVERSION KIT GD-160!

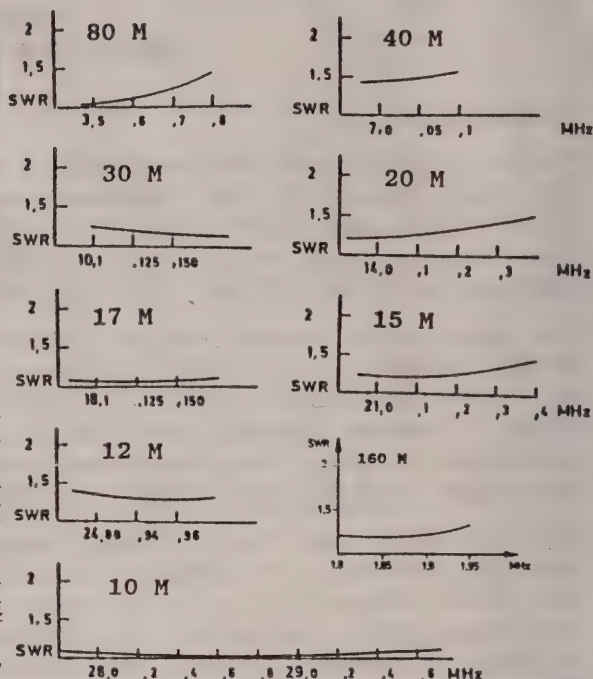
GARANT
GD-6



The GD-6 to GD-9 were tested by the ARRL lab in May 1985 and approved for advertising in QST. The GD-6 was tested and recommended by TCA magazine in June 1985. The GD-6 and GD-8 were tested and recommended as first choice in a test of three wire antennas by the CNIB, Canadian National Institute for the Blind. TCA and CNIB confirm that there is no tuner needed on all bands tested.

The GARANT WINDOM DIPOLE GD-6 works 80-40-20-17-12-10m bands. The GARANT WINDOM DIPOLE GD-8 works 80-40-30-20-17-15-12-10m bands. GD-6 and GD-8 max. length 41.5m/137ft. The GARANT WINDOM DIPOLE GD-7 works 160-80-40-20-17-12-10m. The GARANT WINDOM DIPOLE GD-9 works 160-80-40-30-20-17-15-12-10m bands. GD-7 and GD-9 max. length 77.7m/255ft. **NO TUNER NEEDED IF INSTALLED PROPERLY. SWR USUALLY BETTER THAN 1.5:1.** This is not a dummy load antenna! Our special GD-balun matches the low-impedance (50 Ω) coax feedline to the high impedance windom type antenna. 50 Ω connector in balun. Choose between the 500W PEP version or the strong 2KW PEP version. **ALL GARANT WINDOM DIPOLES COME WITH A 3-YEAR WARRANTY.** Who else does that?

SWR-curves of GD-9 as published in a popular amateur radio magazine. →



MODEL

GD-3/500W: 40-20-10m, 500W PEP, 67' max. length,				
GD-3/2KW: 40-20-10m, 2KW PEP, 67' max. length,				
GD-5/500W: 40-30-20-15-10m, 500W PEP, 67' max. length,				
GD-5/2KW: 40-30-20-15-10m, 2KW PEP, 67' max. length,				
GD-6/500W: 80-40-20-17-12-10m, 500W PEP, 137' max. length,				
GD-6/2KW: 80-40-20-17-12-10m, 2KW PEP, 137' max. length,				
GD-8/500W: 80-40-30-20-17-15-12-10m, 500W PEP, 137' max. length,				
GD-8/2KW: 80-40-30-20-17-15-12-10m, 2KW PEP, 137' max. length,				
GD-7/500W: 160-80-40-20-17-12-10m, 500W PEP, 255' max. length,				
GD-7/2KW: 160-80-40-20-17-12-10m, 2KW PEP, 255' max. length,				
GD-9/500W: 160-80-40-30-20-17-15-12-10m, 500W PEP, 255' max. length,				
GD-9/2KW: 160-80-40-30-20-17-15-12-10m, 2KW PEP, 255' max. length,				

U.S. FUNDS		CANADIAN FUNDS	
PRICE	S.H.I.	PRICE	S.H.I.
\$ 89.00	\$7.00	\$109.00	\$ 8.90
\$175.00	\$8.00	\$209.00	\$10.00
\$109.00	\$8.00	\$129.00	\$10.00
\$190.00	\$9.00	\$229.00	\$11.50
\$ 99.00	\$7.00	\$119.00	\$ 8.90
\$185.00	\$8.00	\$219.00	\$10.00
\$119.00	\$8.00	\$139.00	\$10.00
\$199.00	\$9.00	\$239.00	\$11.50
\$125.00	\$10.00	\$149.00	\$12.50
\$209.00	\$10.00	\$249.00	\$12.50
\$145.00	\$10.00	\$169.00	\$12.50
\$229.00	\$10.00	\$269.00	\$12.50

10 DAY MONEY-BACK GUARANTEE

You may order any of the GARANT WINDOM ANTENNAS described in this brochure for a 10-DAY NO-RISK INSPECTION. Have a look at the item in the privacy of your home and if you don't like what you see, return the item prepaid to us at your expense within 10 days after receiving it in the mail, and we'll refund the full purchase price less shipping and handling charges (S.H.I.) which we had to pay to get it to you. Less than a fraction of 1% returned an antenna so far. Whenever it happened, a refund check was in the mail within 24 hours after getting the merchandise back. We are in the amateur radio mail order business for more than 24 years. Honesty, does pay in the long run.

PAYMENT, SHIPPING, PRICING POLICY: You may pay with money order or cashier's check for immediate delivery. If you pay with a personal check, allow four weeks for clearing. You may also pay with VISA or MASTERCARD, if you order more than \$100.00 in U.S. funds. We accept credit card orders by phone. DIAL 1-807-767-3888 during our regular business hours. YES, we have all items in stock for instant shipment. All prices are F.O.B. Thunder Bay and are subject to change without further notice. All shipping charges quoted are for shipments from Thunder Bay to any destination in the U.S.A., its territories and possessions via surface parcel post.

All GARANT WINDOM ANTENNAS can be up-graded or down-graded at any time, i.e. a GD-6 can be converted to a GD-8, GD-7 or GD-9. Or, a GD-9 can be down-graded to a GD-7, GD-8, or GD-6. This is easily done by cutting off some wire or adding on some wire.

You may pay either in U.S. funds or in Canadian funds at the prices shown above. Credit card customers will be charged in Canadian funds by us, but your bank will bill you in U.S. funds at the current exchange rate, which amounts more or less to the prices shown above in U.S. funds. Our shipping charges (SHI) apply only to shipments from Canada to the U.S.A. The shipping rates to

are as shown below:

AIRMAIL (GD-6 to GD-9): Can. \$

SURFACE MAIL (GD-6 to GD-9): Can. \$

You may install any GARANT WINDOM ANTENNA as a straight horizontal dipole, an inverted-V, or an L-shaped horizontal dipole with a 90° angle at the balun.

GARANT



CONGRATULATIONS !

Here is your high quality GARANT GD-7 ANTENNA. It takes only a few moments to cut the wire to size and to assemble the antenna as depicted above. Most effective operation is achieved when the antenna is in the clear - away from guy wires, power and telephone lines, trees, buildings, etc. The higher the GARANT GD-7 is installed the better will be the results. The SWR-curves shown here were accomplished with the antenna 8m (25 ft.) above ground and a water level of about 2m (6 ft) below surface.

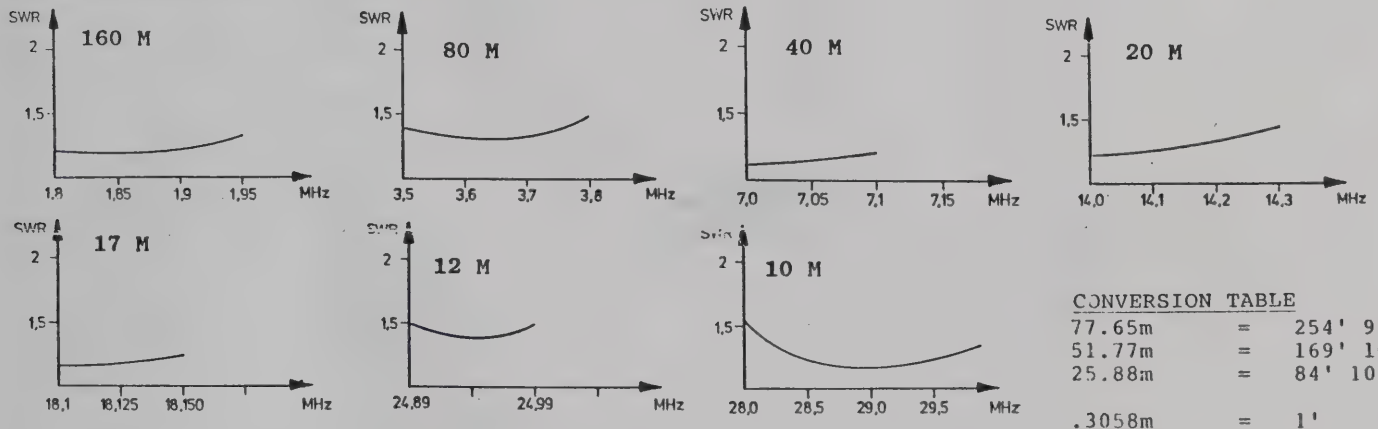
When operating and using the GARANT GD-7, be sure the transmitter is tuned to the correct frequency before power is applied. Operating a transmitter not tuned to the correct antenna frequency may damage the balun. This will also be the case if you apply more than 500 Watt PEP to the antenna. This is misuse and is not covered under warranty. Any breakage of antenna wire will be considered an accident, but there is sufficient wire supplied to patch any broken wire.

There is enough wire enclosed to assemble the antenna correctly. Always cut the wire so that you'll have at least 20 cm more on each side than is shown above.

The correct length for the wire that runs from endinsulator "A" to the "BALUN" is 25.88 m. The length for the wire that runs from the "BALUN" to the endinsulator "B" is 51.77 m. If you use these measurements and put the antenna up high enough and horizontally there will be no need for any further adjustment of the wire.

The GARANT GD-7 ANTENNA can be used as an inverted-V antenna or horizontally with a 90° angle at the balun, but the SWR might be different than shown here.

TYPICAL SWR -- GARANT GD-7



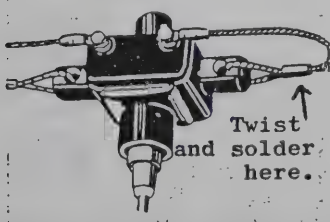
The GARANT GD-7 is designed for operation on 160-80-40-20-17-12-10m band. If you want also to work on 15m or 30m you must add the GD+2 conversion kit that turns your GD-7 into a GD-9. If you ever find (after moving) that you don't have sufficient space for the GD-7/GD-9, please write to GARANT ENTERPRISES and we'll mail you the instruction sheet for the GD-6/GD-8. Please enclose proof of purchase and \$ 1 for postage and handling.

GARANT ENTERPRISES warrants for a period of 3 years from the date of purchase by the original consumer this antenna to be free, under normal use and service, from defects in materials and workmanship and to promptly repair or replace the product at our option when it is returned with proof of purchase to our GARANT WARRANTY SERVICE CENTRE, postage prepaid and return postage enclosed, during the 3-year period and our examination of the product discloses the defect to be our fault.

All claims of defect or shortage must be sent postage prepaid and return postage enclosed to: GARANT WARRANTY SERVICE CENTRE, Dept. GD, GARANT ENTERPRISES, 227 County Blvd., Thunder Bay, Ontario, Canada, P7A 7M8.

The warranty shall not apply to any product which has been repaired or altered in any manner by anyone other than our GARANT WARRANTY SERVICE CENTRE or products which have been subject to misuse, negligence, accident, or which have been connected, installed, used or otherwise adjusted other than in accordance with written instructions furnished by GARANT ENTERPRISES.

GARANT ENTERPRISES does not assume any liability for incidental, special and/or consequential damages of any kind whatsoever and in any event our liability shall in no case exceed the original purchase price of the product. Implied warranties, including without limitation, warranties of merchantability or fitness are expressly limited in duration to the 3-year warranty specified above.



Connect antenna wire to balun as shown here. Twist wire 3 to 5 times and solder together where shown in picture. Use 50 to 60 Ohm coax cable to feed your new GARANT GD-7. Good luck and be careful. DO NOT TOUCH POWERLINES WITH YOUR ANTENNA. THIS COULD BE DEADLY!

GARANT ENTERPRISES

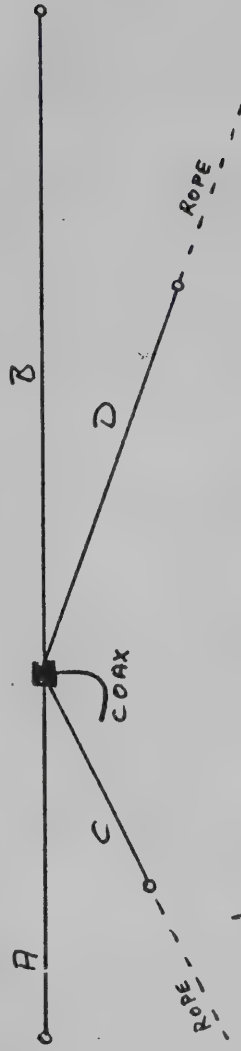
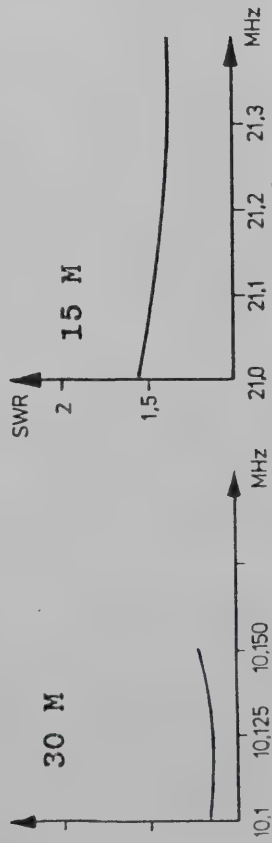
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GARANT GD-9



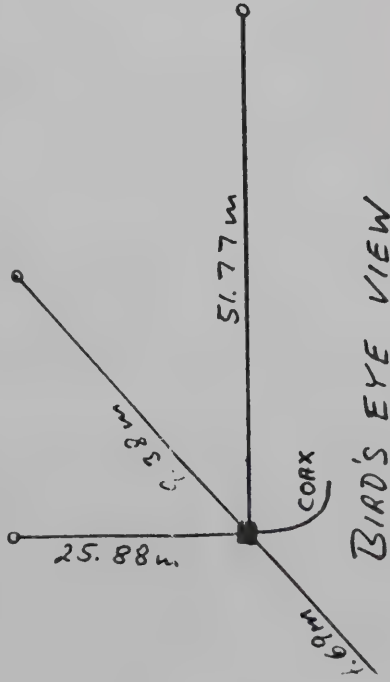
Adding the GD+2 to your GD-7 lets you work 15m and 30m. Cut to size as shown for element "C" and "D" and install. Make sure that the angle between "C" and "D" is about 100°. Now you got the GARANT GD-9 which lets you work 160-80-40-30-20-17-15-12-10m. Typical SWR curves are shown on the left.

As the GD-9 is such a long antenna you may want to try one of the two suggested ways to hang it up. The SWR might change a little, but not much.



GARANT ENTERPRISES

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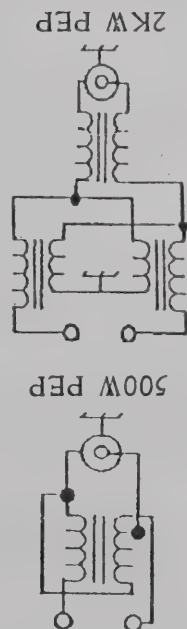
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Our area is great for fishing and hunting. Lake Superior is ideal for sailing. Perhaps, you'll work VE3LML/MM on Lake Superior. He uses a GARANT WINDOW ANTENNA model GD3-500W on his sail boat. Watch out for his call on the air.

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GARANT

GD-7



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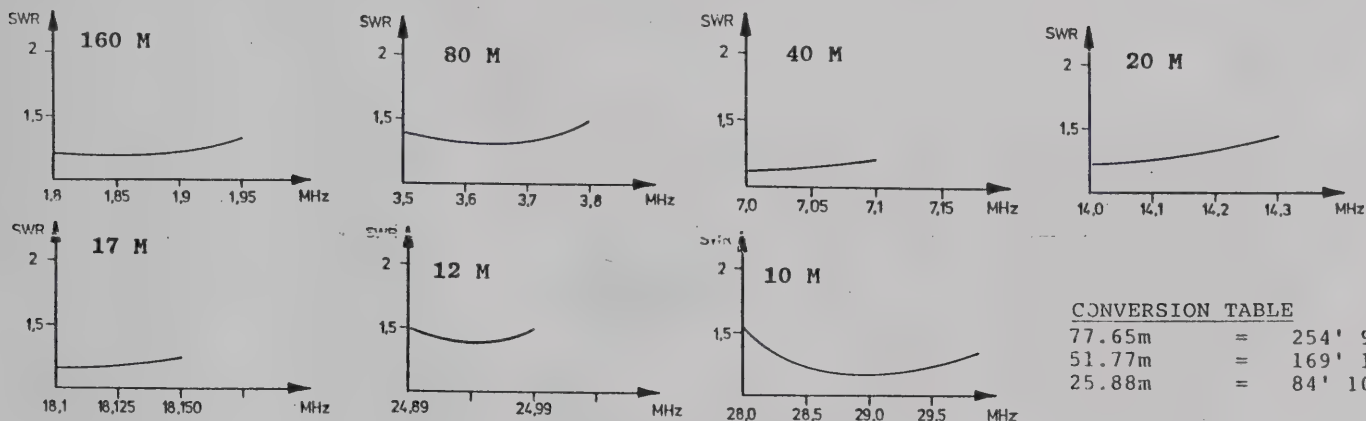
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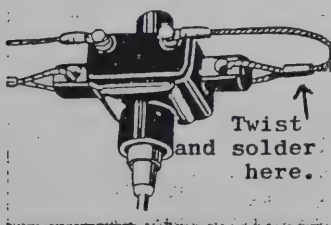
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GARANT ENTERPRISES warrants for a period of 3 years from the date of purchase by the original consumer this antenna to be free, under normal use and service, from defects in materials and workmanship and to promptly repair or replace the product at our option when it is returned with proof of purchase to our GARANT WARRANTY SERVICE CENTRE, postage prepaid and return postage enclosed, during the 3-year period and our examination of the product discloses the defect to be our fault.

All claims of defect or shortage must be sent postage prepaid and return postage enclosed to: GARANT WARRANTY SERVICE CENTRE, Dept. GD, GARANT ENTERPRISES, 227 County Blvd., Thunder Bay, Ontario, Canada, P7A 7M8.

The warranty shall not apply to any product which has been repaired or altered in any manner by anyone other than our GARANT WARRANTY SERVICE CENTRE or products which have been subject to misuse, negligence, accident, or which have been connected, installed, used or otherwise adjusted other than in accordance with written instructions furnished by GARANT ENTERPRISES.

GARANT ENTERPRISES does not assume any liability for incidental, special and/or consequential damages of any kind whatsoever and in any event our liability shall in no case exceed the original purchase price of the product. Implied warranties, including without limitation, warranties of merchantability or fitness are expressly limited in duration to the 3-year warranty specified above.



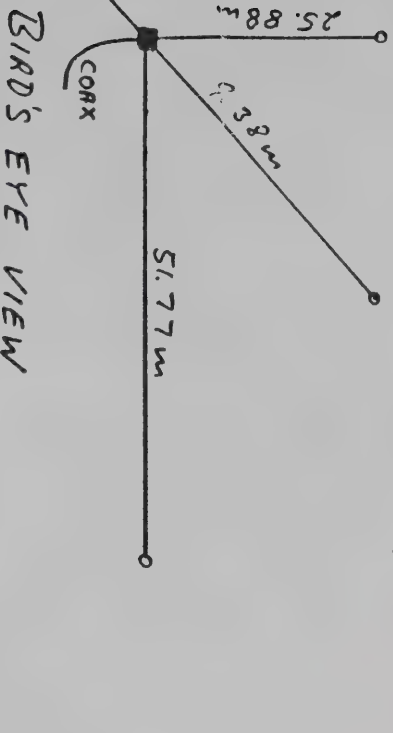
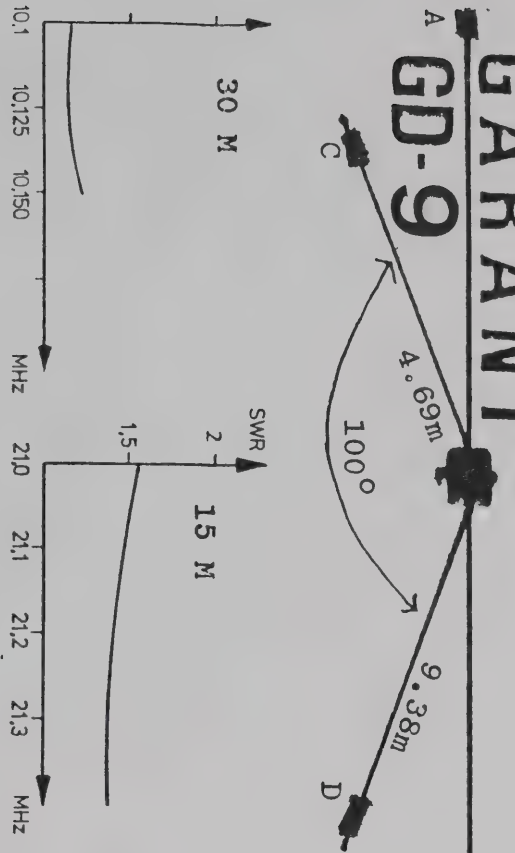
Connect antenna wire to balun as shown here. Twist wire 3 to 5 times and solder together where shown in picture. Use 50 to 60 Ohm coax cable to feed your new GARANT GD-7. Good luck and be careful. DO NOT TOUCH POWERLINES WITH YOUR ANTENNA. THIS COULD BE DEADLY!

GARANT ENTERPRISES

227 COUNTY BLVD • THUNDER BAY, ONTARIO, CANADA P7A 7M8
(807) 767-3888

GARANT

GD-9



Garant's Eye View

NOTE: The SWR at your own location may differ from the values reprinted here for the GD-7 or GD-9.

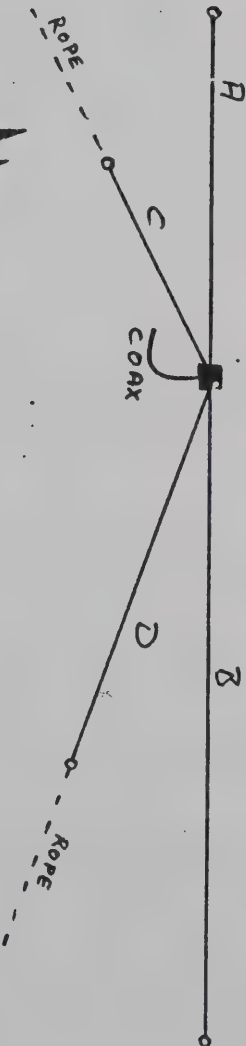
Due to the length of the antenna and the surroundings these values may be better or worse. The windom is sensitive at the ends and at the feedpoint (balun area). Your groundwater level does also influence the performance of any windom antenna. The SWR values shown in this instruction sheet for the GD-7/GD-9 are similar to the ones published in an article on the GD-7/GD-9 antenna in a large amateur radio magazine.

CONVERSION TABLE

9.38m	=	30' 9 1/4"
4.69m	=	15' 4 5/8"
.3048m	=	1.0'

Adding the GD+2 to your GD-7 lets you work 15m and 30m. Cut to size as shown for element "C" and "D" and install. Make sure that the angle between "C" and "D" is about 100°. Now you got the GARANT GD-9 which lets you work 160-80-40-30-20-17-15-12-10m. Typical SWR curves are shown on the left.

As the GD-9 is such a long antenna you may want to try one of the two suggested ways to hang it up. The SWR might change a little, but not much.

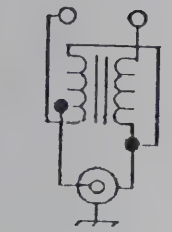


GARANT ENTERPRISES

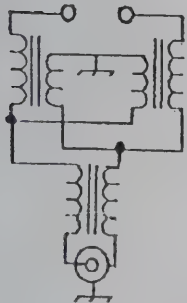
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(807) 767-3888

THE SECRET OF THE GARANT SPECIAL WINDOM BALUNS

In 1928, Loren Windom, W8GZ developed a dipole design that bears his name. If you took the proper feeding point which was off-center in an approximate 1/3:2/3 configuration his dipole design would be able to work several HF bands with one antenna. At that time he used an open feedline. You can't use those open feedlines any longer, because of TVI and the danger of electric shocks, which could mean law suits later on.



500W PEP



2KW PEP

The GARANT WINDOM ANTENNAS with 500W PEP power handling capability use a one-step balun as shown in the schematic to your left. A toroid with the proper winding ratio will do the trick that you can use our windom with regular coax cable, i.e. RG8U, RG213U. The balun will transform the low impedance of the feedline into the correct high impedance at the antenna feedpoint.

Our GARANT SPECIAL BALUN with 2KW power handling capability uses a two-step approach. That's why we call it a duplex balun. The upper part of the balun acts like a choke or current balun to reduce the amount of unnecessary radiation of the feedline. This design has proven to be very effective for the last five years. It definitely cuts down on TVI and in certain cases it will help to flatten the SWR curves, i.e. on the GD-3 and GD-5 on the 10m band. In either case, 500W PEP or 2KW PEP, you'll get a GARANT WINDOM ANTENNA that performs really well, as the letters of our customers prove.

* * * * *

EXPLANATION TO THE SWR CURVES shown on page 2 of this data report. You'll have noticed that the data for the 75/80m band end at 3.8MHz and at 7.1MHz for the 40m band. The reason is simple. Those SWR curves are part of an article on the GD-9 type windom antenna in a European amateur radio magazine. **In Europe the 75/80m band ends at 3.8MHz and the 40m band ends at 7.1MHz.** It would be illegal to work above those frequencies in Europe.

We figured, we rather show you actual SWR curves, developed by an independent body, than those we found ourselves. If we had shown our own SWR values, you might think they were fabricated.

Nevertheless, read what the users of our GARANT WINDOM ANTENNAS write. Many use them as their sole antenna for all bands - including 75/80m or 40m. In June 1985, Frank Hughes, VE3DQB, at that time editor of the magazine, THE CANADIAN AMATEUR (TCA) published his test of a GARANT WINDOM ANTENNA. Here are Frank's findings for the 75/80m and 40m bands.

On the low end of the 80m band Frank found a SWR of 1:1.25. On the high end of the 80m band Frank found a SWR of 1:1.4. For the 40m band Frank published an SWR value of 1:1.1 on the low and high end of the 40m band.

I guess, those figures found by an independent tester, proof more than anything else, that the GARANT WINDOM ANTENNAS do really work as advertised. If in doubt, read the letters of our many antenna users. They are all genuine. We have them on file in our offices in Thunder Bay. If you don't trust us, drop in during regular business hours whenever you are in Thunder Bay and we'll show them to you.

Our area is great for fishing and hunting. Lake Superior is ideal for sailing. Perhaps, you'll work VE3LML/MM on Lake Superior. He uses a GARANT WINDOM ANTENNA model GD3-500W on his sail boat. Watch out for his call on the air.

Also keep in mind, all our GARANT WINDOM ANTENNAS are sold with a 10-DAY NO-RISK MONEY-BACK GUARANTEE. They also have a 3-YEAR LIMITED WARRANTY. Who else has this much confidence in his merchandise?

ALPHA DELTA

THIS PACKAGE CONTAINS:

DX-CC

80-40-20-15-10
METERS

82 Ft. Long

“No Trap”

SHORTENED DIPOLE

- | | |
|-------------------------------|-----------------------------------|
| * Stainless Steel Hardware | * No Traps - No Power Limitations |
| * Special Nylon Rope Provided | * Automatic Band Switching |
| * Direct Coax Connection | * Compact Size |
| * Pre-Assembled Connections | |

CAUTION! CAUTION! CAUTION!
Installation of this product near
powerlines is DANGEROUS. USE
EXTREME CAUTION. Think Safety!

Made in U.S.A.

ALPHA DELTA COMMUNICATIONS, INC.

Suite 210, 1232 E. Broadway, Tempe, Arizona 85282



THANK YOU for your purchase of this Alpha Delta Model DX-CC 80-40-20-15-10 MTR antenna. We know that you are going to be well pleased with the antenna and its performance. Only the best in materials and hand craftsmanship have gone into its design and construction.

The Alpha Delta DX-CC will deliver performance far beyond that of similar antennas of equal size. Like every antenna, the DX-CC must be installed correctly to achieve its inherent peak performance. To help insure that you do obtain good performance, we suggest that you read through this manual entirely and study the figures and diagrams associated with the installation.

INSTALLATION NOTES

*Due to the fact that the Alpha Delta DX-CC antenna approximates a half wave dipole (although greatly reduced in length), the method of mounting or installing it does not present some of the problems associated with other types of antennas. Towers, trees, wooden utility masts, etc. may all be employed as the support structure for the Alpha Delta DX-CC!

*Refer to Figure No. 1: The DX-CC may be installed as an inverted vee, flat top dipole, sloping dipole, etc. The inverted vee configuration seems to be the easiest for most amateurs to utilize. It has several benefits, such as requiring but a single central support structure for the DX-CC center insulator. Remember, though, the Alpha Delta DX-CC was designed for compromise installations where there are space limitations. A little thought will allow the DX-CC to be installed in spaces normally thought to be too small for an antenna for these frequency bands!

*Tower mounting of the DX-CC will require some form of "standoff" for support of the DX-CC center insulator. A spacing of 18" or more away from the tower will prove adequate.

*Mounting height for the DX-CC is not overly critical. However, as with most half-wave antennas, the higher and in the clear, the better. Let the space you have available dictate the mounting height and scheme of installation. The antenna has been tested at a height of 35 ft. Lower heights may cause higher VSWR.

*The introduction of your DX-CC into a tower system employing multiple guy wires or other wire antennas may cause detuning of the DX-CC antenna. This may be evidenced by a shift in the resonant frequency or increase in the minimum VSWR of the antenna. Try to keep the DX-CC as "in the clear" as possible. Installing the DX-CC so that it is in a different plane than the guy wires will help, as will "breaking" the guy wires with strain insulators. For some installations, it may be necessary to employ the use of an antenna tuner to overcome this detuning situation.

*The DX-CC utilizes the exclusive Alpha Delta ISO-RES coil principle for shortening and multibanding an antenna. The ISO-RES is not a trap, due to the fact that there isn't a trap capacitor being used. Thus, the DX-CC is a much lower "Q" antenna than one that would be constructed using true traps! This allows the DX-CC to be broader in bandwidth than is possible with a trap-type antenna of equal size. The lower "Q" also allows the user to employ a moderate range antenna tuner (match box) for achieving resonance and minimum SWR anywhere within the covered frequency bands.

NOTE: Some automatic antenna tuners in transceivers do not have the impedance range to tune the Model DX-CC on bands other than the covered ranges. An external wide range tuner may be required.

INSTALLATION INSTRUCTIONS

1. Unroll the DX-CC wire elements, removing any kinks that may have been induced during the packing operation. At each side of the center insulator you will find 3 wires:

- A. 80/40 15 meter wire with an ISO-RES coil and 6 stand-off insulators installed.
(Approximately 41 ft. long)
- B. 20 meter wire. (Approximately 16 ft. long)
- C. 10 meter wire. (Approximately 8 ft. long)

With the antenna wires laid out on the ground in a fully extended condition, run the 20 and 10 meter wires through the stand-offs as shown in FIG. 2 with the 20 meter wire running thru the center holes of the 3 long stand-offs and thru the bottom holes of the 3 short stand-offs. The end of the 20 meter wire should be twisted back on itself around the last stand-off for proper support, after the wire is taut.

The 10 meter wire is run thru the bottom holes on the 3 long stand-off as shown. It is then twisted back on itself through the last long stand-off, after being made taut.

All of the stand-offs should be spaced equally along the wires for best support.

When all the wires and stand-offs have been positioned properly, tightly wrap wire-ties around the top and bottom of each stand-off and antenna wire to prevent movement. See FIG. 2 for method. For the wire-ties, cut approx. 6" lengths from the 12 ft. coil of wire provided.

2. Choose the arrangement for mounting your new DX-CC, (inverted vee, flat top dipole, etc.). If the inverted vee form is chosen, cut a short length of the supplied rope to use as tie support for the DX-CC center insulator.
3. Tie the remaining two pieces of rope to each end insulator of the DX-CC.
4. Any 50 ohm coaxial cable may be employed for use with the DX-CC. We suggest the use of RG-213 as it is generally a good "buy" and will last many years. Installations where only low power operation is being used can get by with RG-58A/U or RG-8X type coax.
5. If the inverted vee configuration is to be used, try to arrange the ends of your DX-CC so that when viewed from the side the angle at the apex of the antenna is 90 degrees between the two element wires — See Figure No. 1.
6. The two ISO-RES coils have been coated with a very special polyurethane with UV light block polymer, and require no further coating or protection. A small amount of coax seal placed around the bare copper ends of the element wires (at the screws) on the coils would be helpful. (Be sure to remove the protective plastic bubble wrap from the ISO-RES coils).
7. When placing any coaxial sealant over the SO-239 coax connector on the bottom of the DX-CC center insulator, be certain not to cover the four drain holes provided to allow moisture release!
8. When tying off the two ends of your DX-CC, allow a small amount of slack (or sag) in the system. Don't cinch the elements down snug!

TUNING AND OPERATING INSTRUCTIONS

*Your Alpha Delta DX-CC has been set at the factory for resonance within the 80,40,20,15 and 10 meter bands. With proper installation, you should easily find the resonance points within these covered bands. The design of the DX-CC is such that the normal VSWR on 10 meters is approx. 2:1, with the VSWR on the other bands approaching 1.5:1 at resonance. The VSWR curve on 20, 15 and 10 meters is usually broad enough, depending upon the installation site, that fine tuning and trimming on these bands is not normally worth the effort. Additional radiation efficiency is typically not realized. If VSWR is higher than specified for your rig, just use an antenna tuner and enjoy the antenna as is! (No separate adjustment is available for 15 meters since it is a third harmonic of the 40 meter section.)

***IF USE OF AN ANTENNA TUNER IS PLANNED — NO TUNING OR MODIFICATION IS NECESSARY. PUT IT UP AS IS AND ENJOY IT!**

*Should the installation be such that it is detuning the DX-CC, we recommend the use of an antenna tuner to cancel the reactances and achieve normal swr and resonance.

*We recommend the use of a good, wide range antenna tuner (matchbox) for use with the DX-CC on the 80M band. It is difficult to construct any antenna that will offer broad bandwidth on the 80M band! Many manufacturers offer such tuners for sale, or one may refer to any of the "handbooks" for a construct-it-yourself project!

*When installed in the inverted vee configuration, minimum SWR may be regulated (to a degree) by varying the included angle (apex angle) and the mounting height. Since each installation offers its own set of variables, this work must be done on a somewhat "trial and error" basis.

*An open wire "ladder" type feedline (a balanced feedline) may be used with the Alpha Delta DX-CC. Please note on the main diagram the two arrows labeled "a". The two conductors of your balanced feedline are connected to the screws shown in the diagram. A good antenna tuner for use with balanced feedline would be needed for such an optional installation and would allow low loss Multi-band operation. 8/32 stainless steel washers and nuts required.

*For a convenient way to lower the operating frequency on the 40M band, please refer to Figure No. 2 where the installation of the stub tuning wires are shown. Please cut a 6 ft. length of wire into two equal lengths. Install one of these wires under the inner-most nut on the ISO-RES coil. Repeat this for the ISO-RES on the other side of the DX-CC. Trimming these two stub-tune wire will allow the user to adjust the 40M resonant frequency to the point desired. To raise the operating frequency on 40M, the main 40M wires must be shortened as necessary to reach resonance.

Remember to strip the insulation from the connection end of the stub tuning wire.

*To lower the operating frequency on the 80M band, a small length of wire may be soldered to each side at the ends of the DX-CC. These ends may then be trimmed to achieve the desired operating frequency. To raise the operating frequency on 80M the 80M wires must be shortened as necessary to reach resonance.

*The DX-CC may be operated on all of the amateur HF bands with the incorporation of a good antenna tuner into-the system! Using the antenna tuner in the system will allow full operation WITHOUT ANY MODIFICATION OR TUNING OF THE DX-CC.

If a tuner is to be used in a multi-band arrangement (all HF bands), a recommended alternative arrangement would be to short the shield and center conductor of the coax at the transmitter end, then connect as "long wire" to the random wire output of the antenna tuner. This system has worked very well during our many tests of the DX-CC. For these installations the antenna tuner must be well grounded.

Periodic clearing of the drain holes near the SO-239 connector will reduce build-up of residue such as spider webs, etc.

WARRANTY AND SERVICE POLICY

Each Alpha Delta model has been carefully designed and thoroughly field tested to provide a proper match to a 50 ohm source. Conditions of high VSWR can be caused by acquired reactances of towers, ground systems, other antennas, height above ground, roof tops and guy wires. In these cases it may be necessary to employ the use of a wide range tuner.

Alpha Delta Warranty is limited to the repair or replacement of any component we find to be defective. Trimmed wire elements are not covered under this warranty.

Should you feel a component is defective WITHIN 90 DAYS of purchase do the following:

1. Call our office or write for return authorization. Phone or Write:
Alpha Delta Communications, Inc.
Suite 210, 1232 E. Broadway
Tempe, Arizona 85282
(602) 966-2200
2. The antenna will be returned to you, shipping prepaid.

NOTE: Installed antennas may not be returned for credit or refund since they cannot be re-stocked and re-sold as new. Tests show that our shortened antennas compare favorably with full size dipoles when installed in the clear.

IMPORTANT NOTE:

BEFORE contacting the factory with questions concerning the S.W.R. or resonant frequency run an S.W.R. curve from band edge to band edge for the band or bands in question. Check the VSWR every 25 KHz (every 10 KHz when the VSWR approaches 2:1 or less, to find the minimum). Have this information available when writing or phoning as this will help us to determine if the antenna is too long, too short, or picking up reactance from some nearby object.

The diagrams show three types of antenna feed points:

- INVERTED VEE:** A V-shaped antenna with a central feed point at the top. A vertical dashed line labeled "Support" runs from the feed point down to the base.
- FLAT TOP DIPOLE:** A horizontal antenna with a central feed point. A horizontal dashed line labeled "Support" runs from the feed point to the ends of the antenna.
- SLOPING DIPOLE:** A diagonal antenna with a feed point at the top. A vertical dashed line labeled "Support" runs from the feed point down to the base.

80 MTRS

40/15

20

10

12"

EQUAL SPACE OTHERS ALONG WIRES

Same as other side

40 MTR Stub Tune Wire (Option)

ANTENNA WIRE

WIRE-TIE METHOD AT ENDS OF ACRYLIC STAND-OFFS

The G5RV Returns

Excepting perhaps the "mainstay" half-wave dipole and quarter-wave vertical, antennas come and go in popularity almost as quickly as do fashions. "Out" for several years has been the G5RV, popularized by Louis Varney, G5RV, but it's coming back "in" as a very simple and inexpensive multiband dipole. Its new-found popularity (initially, it seems, with overseas operators) is largely due to interest in the new WARC-generated amateur bands at 10, 18, and 24 MHz. Basically, the G5RV is a 102 foot flattop fed in the center with a pre-cut length of twinlead or openwire line. As such, it operates much as a shortened dipole on 75 and 80 meters and as a sort of extended center-fed Zepp on the higher bands.

Several versions of the antenna have been seen. One popular version, and the one I prefer, uses a 33 foot length of openwire line (or a 29 foot length of twinlead) and connects directly to a balanced antenna tuner. This version should be fairly easy to match on all bands, and the use of openwire feed promotes extremely low line loss, which is virtually negligible on the HF bands despite high SWR on the line.

A second version uses the same 33 or 29 foot length of balanced feedline, as above, but this in turn connects to a 66 foot or longer section of low-impedance coax. The coax is run to a transmatch at

the station, which is required to reduce the line's end impedance to a low-enough value for the transmitter or transceiver to handle. Coax, of course, wasn't really designed to be handled this way, and line loss on the higher bands can be significant. But its use does simplify the problems involved with handling openwire line within the hamshack. Fig. 3 shows overall antenna configuration.

The G5RV is certainly one of the simplest and most inexpensive antennas you can erect, but it is one that should produce good results if (1) care is taken to erect it high and in the clear; and (2) care is taken in routing the twinlead or openwire line. The antenna can even be operated on 160 meters by tying the feeders together at the bottom and operating the antenna against ground as a random-length, top-loaded vertical.

Do we have any G5RV users in the CQ audience?

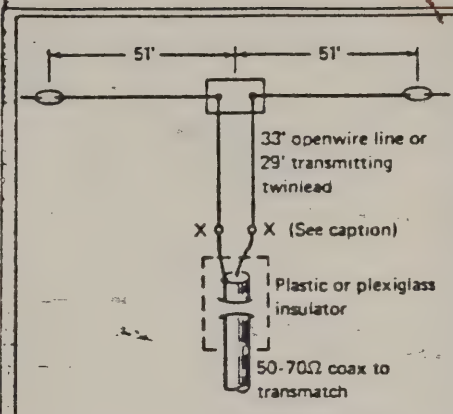


Fig. 3- G5RV multiband antenna. The G5RV multiband dipole can be configured in several ways. Most designs place the flattop at 102 feet overall, fed with a 33 foot length of openwire line, or a 29 foot length of twinlead. The antenna may be fed directly at points X-X by the balanced output of an antenna tuner or transmatch, or it may be fed using a 66 foot or greater length of coaxial cable, as shown above. If coax is used, a transmatch to handle unbalanced line is required at the transmitter end. Use of coax may be tricky, and may result in undesirable line radiation, matching and loading problems, and significant line loss on the higher bands.

For further info see the October 1985 issue of CQ, pages 78-79; July 1986 issue of CQ, pages 59-60; Also there is a write up on this antenna by Louis Varney/G5RV in the July 1984 issue of RADIO COMMUNICATION published in the UK. Also see the current issue of the ARRL antenna handbook, or rather the compendium. Also see the March 1986 issue of ham radio. ⊕ As you can see there are many versions of the G5RV, each technically inclined ham seems to have modifications applicable to his particular location, hi!

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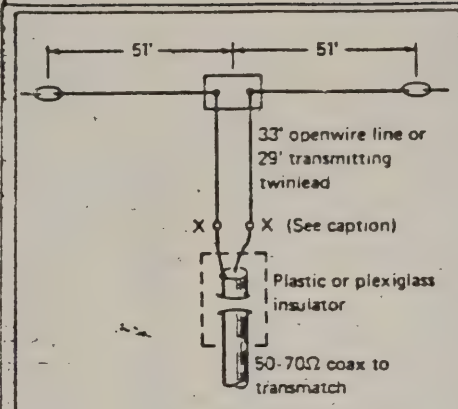
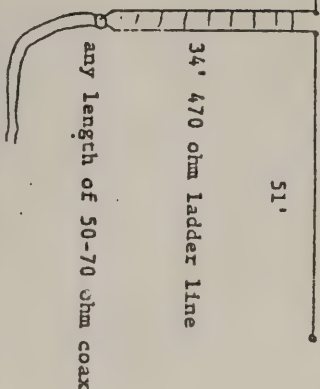


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How about a new antenna?

Here is the info on an antenna that I have been using for about three months with excellent results on 80-10 meters. It requires 102' of space or less if you run it as an inverted V.



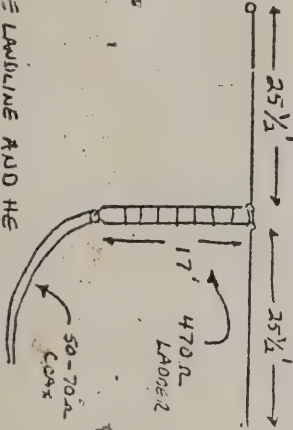
It's called the G5RV and has been around quite a few years. A good antenna project for the spring.

73's,
Scott Schaefer, W4WYS

ANTENNAS -

If this antenna looks familiar, you're right. A thought came to my mind that a scaled down version of the G5RV antenna might be the answer for hams in a "limited space" environment. All dimensions are 1/4 of the G5RV and after 2 weeks of testing at Ted Sealey's (W4GFO) QTH, the results are amazing on 40 and 30 meters, and it should work fine on 20-15 & 10. (Ted has a tri-band beam and hasn't tested it on these bands.) Give it a try!!

FLASH!!! I JUST TALKED TO TED ON THE LADLINE AND HE SAID THAT IT WORKS ALMOST AS WELL AS HIS BEAM ON 20.... WOW!!!



Editor Scott Schaefer, W4WYS

To: W4LARKG "STAN"

From: KB4DHD - "Dick"

I use both the 102' and the 51' G5RV as shown here. The 102' version does well (with tuner) 80-10 meters. The 51' one works well 40-10 meters, with tuner of course. There are many versions of the G5RV. Some reference sources are the March 1985, October 1985 and July 1986 issues of CQ magazine. The March 1986 issue of "Ham radio", the ARRL antenna compendium and the July 1984 issue of the QST magazine which features an article by G3RV - Louis Varney.

73 Dick

OR KC2ZJ

The G5RV Antenna

Most amateurs eventually reach the point where they want to operate on more than one band of frequencies, but sometimes they do not have room for separate antennas for each band.

There are many versions of "trapped" antennas made for this purpose. The antenna appears much like a dipole, but has one or more traps in each half. These traps are really tuned circuits, made with coils and capacitors, that allow some segments of the wire to work on a given frequency, while making the rest of the antenna seem to disappear as far as the radio wave is concerned. Many such trap antennas are sold, and you can buy kits of traps and parts to make your own. Amateur handbooks and magazines have descriptions of how to build the traps and erect and adjust a trap antenna. They are popular, and work well.

However, an amateur in Great Britain, with the call letters G5RV, developed an antenna that works on several bands but does not need the traps at all. It is a basic dipole, but with some rather critical dimensions in both the length of the wire and the length and type of feedline you must use, see Fig. 5-7.

Although it is shown here as an inverted V, it can be erected as a standard "flat top" dipole with equally good results. Many users around the world can attest to the G5RV's effectiveness.

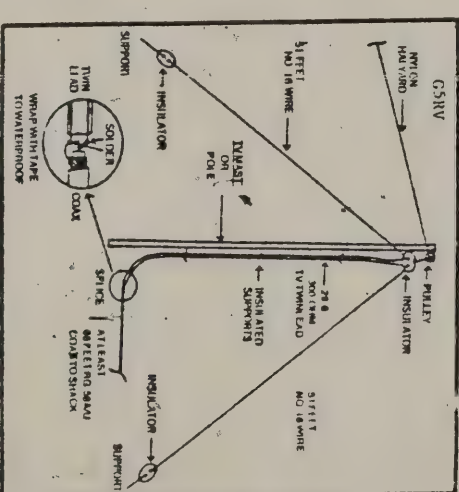


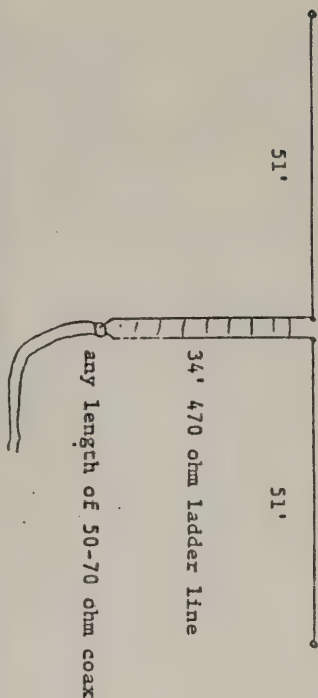
Fig. 5-7 Another version of the dipole is called the G5RV. The difference is that it will work on more than one band. Note the precise dimensions given for the wire and the feedline. This is the secret of being able to work on several amateur bands if you use metal TV line for the support. Note the technical 4 to 6 inches from the detail.

These are the dimensions that I used to build this antenna. But I used 450 ohm ladder, and 35 ft. of 52 ohm Coax. I have to thank, "Dick" KB4DHD FOR THIS INFORMATION.

Stan-W4LARKG

Stan-W4LARKG

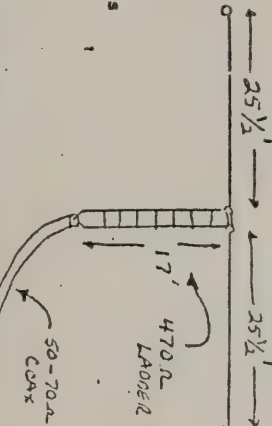
Here is the info on an antenna that I have been using for about three months with excellent results on 80-10 meters. It requires 102 of space or less if you run it as an inverted V.



It's called the GSRV and has been around quite a few years. A good antenna project for the spring.

73's;
with
SCOTT Scheffer, ~~member~~ ^{member} ~~of~~ ^{of} ~~the~~ ^{the} ~~WARYS~~

944^{3/4}W. If this antenna looks familiar, you're right. A thought came to my mind that a scaled down version of the G5RV antenna might be the answer for hams in a "limited space" environment. All dimensions are $\frac{1}{2}$ of the G5RV and after 2 weeks of testing at Ted Sealey's (N4GEO) QTH, the results are amazing on 40 and 30 meters, and it should work fine on 20-15 & 10. (Ted has a cut-band beam and hasn't tested it on these bands.) Give it a try!!



FLASH!!! I JUST TALKED TO TED ON THE LANDLINE AND HE SAID THAT IT WORKS ALMOST AS WELL AS HIS BEAM ON 20..... WOW!!!!

Editor Scott Schaefer, #322497 ~~2225~~ W R45

To: WJAK - STAD
From: KB4DHD - "Dick"

I use both the 102' and the 51' G5RV as shown here. The 102' version does well (with tuner) 80-10 meters. The 51' one works well 40-10 meters, with tuner of course. There are many versions of the G5RV. Some reference sources are the March 1965, October 1965 and July 1968 issues of CQ magazine. The March 1968 issue of "ham radio", the ARRL antenna compendium and the July 1984 issue of the **QSA** magazine RADIO COMMUNICATIONS which features an article by G5RV - Louis Varney.

73 Dick

Most amateurs eventually reach the point where they want to operate on more than one band of frequencies, but sometimes they do not have room for separate antennas for each band.

There are many versions of "trapped" antennas made for this purpose. The antenna appears much like a dipole, but has one or more traps in each half. These traps are really tuned circuits, made with coils and capacitors, that allow some segments of the wire to work on a given frequency, while making the rest of the antenna seem to disappear as far as the radio wave is concerned. Many of such trap antennas are sold, and you can buy kits of traps and parts to make your own. Amateur handbooks and

magazines have descriptions of how to build the traps and erect and adjust a trap antenna. They are popular, and work well.

However, an amateur in Great Britain, with the call letters G5RV, developed an antenna that works on several bands but does not need the traps at all. It is a basic dipole, but with some rather critical dimensions in both the length of the wire and the length and type of feedline you must use, see Fig. 5-7.

Although it is shown here as an inverted-V, it can be erected as a standard "flat top" dipole with equally good results. Many users around the world can attest to the G5RV's effectiveness.

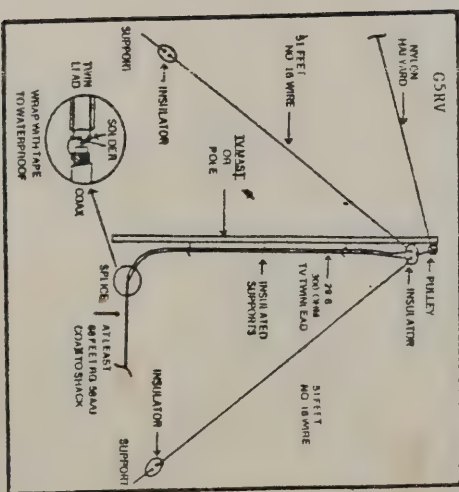
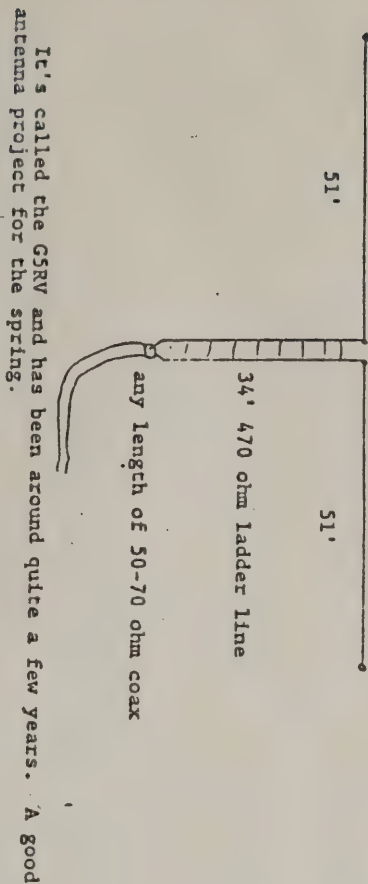


FIG. 5-7 Another version of the dipole is called the GSRY. The difference is that it will work on more than one band. Note the precise dimensions given for the wire and the feedline; this is the secret of being able to work on several amateur bands. If you use metal TV masts for support, keep the distance 4 to 6 inches from the metal.

W1AKG

How about a new antenna?

Here is the info on an antenna that I have been using for about three months with excellent results on 80-10 meters. It requires 102' of space or less if you run it as an inverted V.



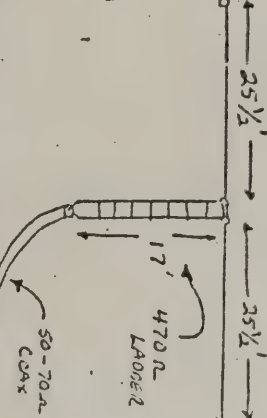
It's called the GSRV and has been around quite a few years. A good antenna project for the spring.

Scott
73's,
Scott Schaefer, W4EVS

ANTENNAS -

If this antenna looks familiar, you're right. A thought came to my mind that a scaled down version of the GSRV antenna might be the answer for hams in a "limited space" environment. All dimensions are 1/4 of the GSRV and after 2 weeks of testing at Ted Sealey's (N4GFG) QTH, the results are amazing on 40 and 30 meters, and it should work fine on 20-15 & 10. (Ted has a tri-band beam and hasn't tested it on these bands.) Give it a try!!

FLASH!!! I JUST TALKED TO TED ON THE LADLINE AND HE SAID THAT IT WORKS ALMOST AS WELL AS HIS BEAM ON 20..... WOW!!!



Editor Scott Schaefer, W4EVS

To: COLAR, "STAN"

From: K9BDD - "Dick"

I use both the 102' and the 51' GSRV as shown here. The 102' version does well (with tuner) 80-10 meters. The 51' one works well 40-10 meters, with tuner of course. There are many variations of the GSRV. Some reference sources are the March 1985, October 1985 and July 1986 issues of Q magazine. The March 1986 issue of "ham radio", the ARRL antenna compendium and the July 1984 issue of the RSGB magazine RADIO COMMUNICATIONS which featured an article by GSRV - Louis Varney.

73 Dick

The GSRV Antenna

Most amateurs eventually reach the point where they want to operate on more than one band of frequencies, but sometimes they do not have room for separate antennas for each band.

There are many versions of "trapped" antennas made for this purpose. The antenna appears much like a dipole, but has one or more traps in each half. These traps are really tuned circuits, made with coils and capacitors, that allow some segments of the wire to work on a given frequency, while making the rest of the antenna seem to disappear as far as the radio wave is concerned. Many such trap antennas are sold, and you can buy kits of traps and parts to make your own. Amateur handbooks and

magazines have descriptions of how to build the traps and erect and adjust a trap antenna. They are popular, and work well.

However, an amateur in Great Britain, with the call letters GSRV, developed an antenna that works on several bands but does not need the traps at all. It is a basic dipole, but with some rather critical dimensions in both the length of the wire and the length and type of feedline you must use, see Fig. 5-7.

Although it is shown here as an inverted V, it can be erected as a standard "flat top" dipole with equally good results. Many users around the world can attest to the GSRV's effectiveness.

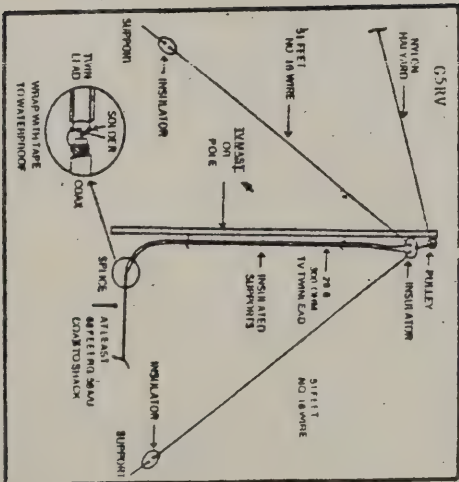
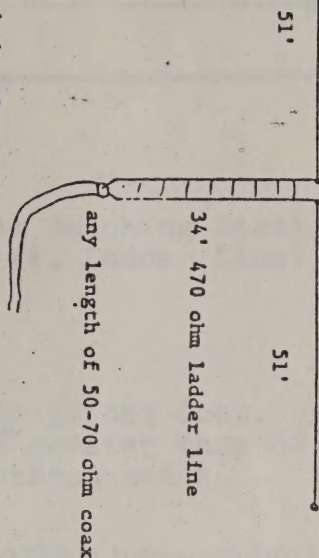


Fig. 5-7 Another version of the dipole is called the GSRV. The difference is that it will work on more than one band. Note the precise dimensions given for the wire and the feedline; this is the secret of being able to work on several amateur bands. If you use metal TV sets for support, from the horizontal 4 to 6 inches from the metal.

Here is the info on an antenna that I have been using for about three months with excellent results on 80-10 meters. It requires 102" of space or less if you run it as an inverted V.



It's called the GSRV and has been around quite a few years. A good antenna project for the spring.

447 m
If this antenna looks familiar, you're right. A thought came to my mind that a scaled down version of the GSRV antenna might be the answer for bands in a limited space environment. All dimensions are $\frac{1}{4}$ of the GSRV and after 2 weeks of testing at Ted Sealey's (W6GFI) QTH, the results are amazing on 40 and 30 meters, and it should work fine on 20-15 & 10. (Ted has a tri-band beam and hasn't tested it on these bands.) Give it a try!!

FLASH!!! I JUST TALKED TO TED ON THE LAWLINE AND HE SAID THAT IT WORKS ALMOST AS WELL AS HIS BEAM ON 2D.... WOW!!!

Editor Scott Schaefer, WJZY-TV

To: WLAG "Stan"
From: KB4DHD - "Dick"

I use both the 102' and the 51' G5RV as shown here. The 102' version does well (with tuner) 80-10 meters. The 51' one works well 40-10 meters, with tuner of course. There are many versions of the G5RV. Some reference sources are the March 1985, October 1985 and July 1986 issues of CQ magazine. The March 1986 issue of "Ham radio", the ARRL antenna compendium and the July 1984 issue of the *ASA* magazine RADIO COMMUNICATIONS which features an article by G5RV - Louis Varney.

73 Dick

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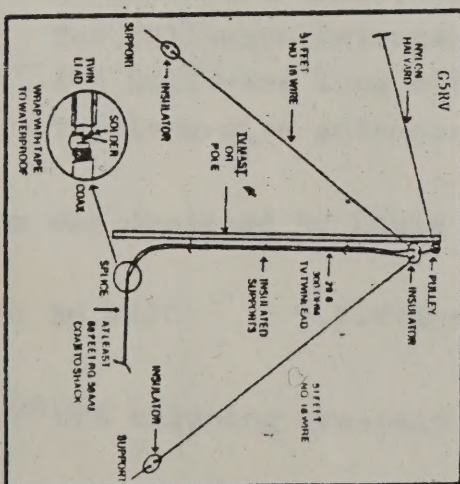
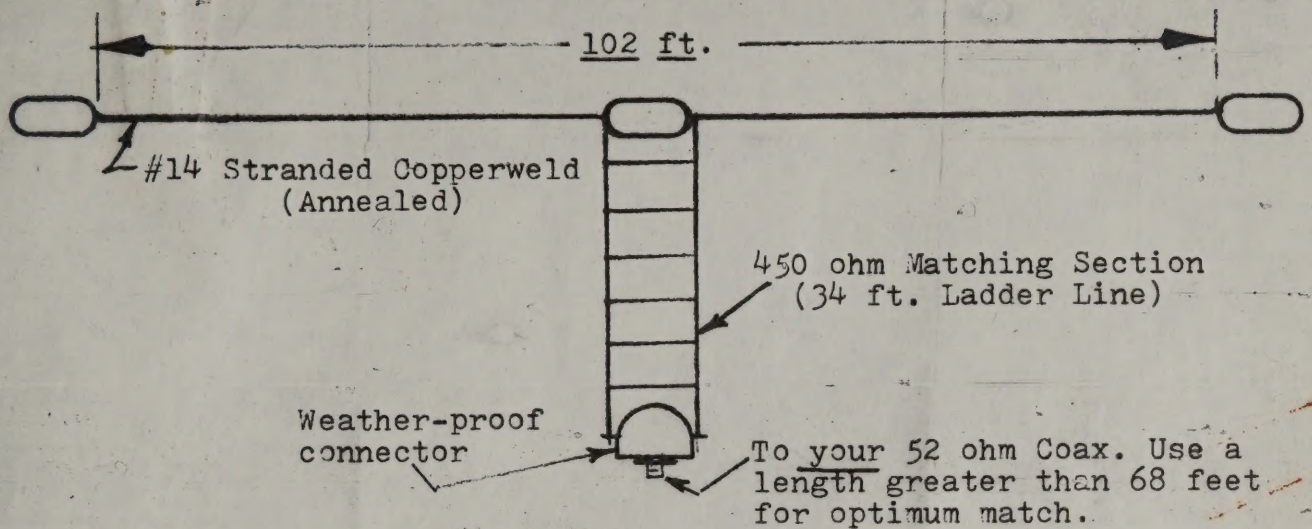


FIG. 5.7 Another version of the dipole is called the GSIV. The difference is that it will work on more than one band. Note the precise dimensions given for the wire and the feeding; this is the secret of being able to work on several amateur bands.⁴ If you use metal TV mast for support, hood them (inverted) 4 to 6 inches from the metal.

THE G5RV MULTI-BAND ANTENNA



This antenna should be supported with rope or other non-conductor. The Ladder Line should come away from the flat-top at a right angle for at least 20 feet.

The antenna can be erected as an Inverted Vee. (120° minimum included angle.) Use the short piece of heat-shrinkable tubing provided for weather-proofing your PL-259 coax plug.

A suitable antenna tuner will permit operation on all bands 80 thru 10. The G5RV functions as follows:

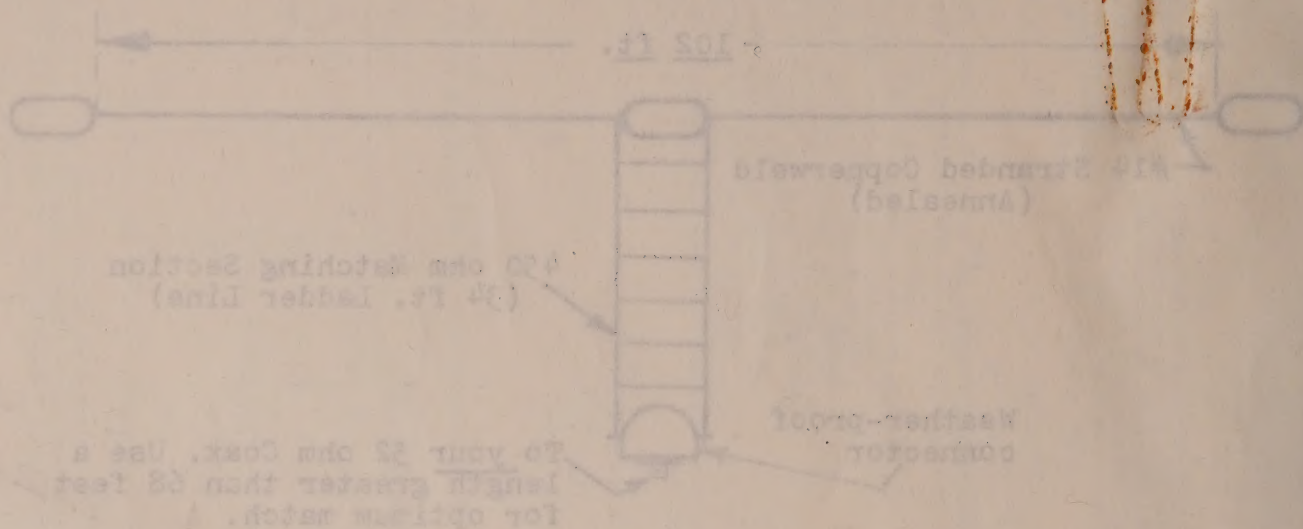
- | | |
|--------------|------------------------------------------------------------|
| 3.5/4.0 MHz. | A half-wave dipole folded up at the center. |
| 7.0/10 | " A colinear array with two half-waves fed in-phase. |
| 14 | " A center-fed long wire of 3 half-waves fed out-of-phase. |
| 18 | " Two full-wave antennas fed in-phase. |
| 21/24 | " A 5 half-wave long wire. |
| 28 | " Two long-wire antennas, each 3 half-waves, fed in-phase. |

This antenna was designed by Louis Varney, G5RV, in 1946.

Manufactured by WLJC

T.V.Evans, 113 Stratton Brook Road
Simsbury, Ct. 06070

Price \$ 35.00 UPS shipping pre-paid 203-658-5579



This antenna should be supported with rope or other non-conductor. The ladder line should come away from the flat-top at a right angle for at least 20 feet. The antenna can be erected as an inverted Vee, (120° minimum included angle). Use the short piece of heat-shrinkable tubing provided for weather-proofing your PL-259 coax plug. A suitable antenna tuner will permit operation on all bands 80 thru 10. The GSV functions as follows:

- 3-5/8 MHz. A half-wave dipole folded up at the center.
- 7.0/10 " A collinear array with two half-waves fed in-phase.
- 7 " A center-fed long wire of 2 half-waves fed out-of-phase.
- 18 " Two full-wave antennas fed in-phase.
- 21/24 " A 2 half-wave long wire.
- 28 " Two long-wire antennas, each 2 half-waves, fed in-phase.

This antenna was designed by Louis Varney, G2NV, in 1946.

Manufactured by WJLC T.V. Evans, 113 Stratton Brook Road
 Simsbury, Ct. 06070
 Price \$35.00 w/ shipping pre-paid 803-528-2272